Expanded Site Inspection
Final Report

for

DeBoer Landfill
USEPA ILD 062 474 598
August 1994

Black & Veatch Waste Science, Inc.
101 North Wacker Drive
Suite 1100
Chicago, Illinois 60606

DE BOER LANDFILL
ILD 062 474 598

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: April 21, 1995

SUBJECT: DeBoer Landfill Expanded Site Inspection

FROM: Alan Altur, Site Assessment Section

TO: Jim Lerquin
Office of State Representative Zickus

Per our conversation, attached is a copy of the Expanded Site Inspection for the DeBoer Landfill. A Site Assessment Team will be formed shortly which will evaluate what the next course of action for this site will be. This team will evaluate for short and long-term response action, if the site needs placement onto the National Priorities List (NPL), or if the site warrants no further response actions. Since I have been reassigned as the Site Assessment Manager for Michigan sites, the new Illinois SAM will be Sonia Vega. She can be reached at (312) 886-7191. Thank you for your interest in this site.

Enclosure

bcc: S. Vega, SAS

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1.0 Introduction

On February 4, 1993, the Alternative Remedial Contracting Strategy (ARCS) contractor was authorized, by approval of the work plan amendment by the U.S. Environmental Protection Agency (USEPA) Region V, to conduct an expanded site inspection (ESI) of the DeBoer Landfill site in Palos Hills, Cook County, Illinois.

The site was initially placed on the Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) on June 1, 1980 as a result of a request for discovery action initiated by the Illinois Environmental Protection Agency (IEPA).

The facility received its initial Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) evaluation in the form of a preliminary assessment (PA) report completed by IEPA, on August 8, 1984. The sampling portion of the ESI was conducted on August 25 to 27 and September 2, 1993, when a field team collected four surface water, twelve sediment, ten soil, and two waste samples.

The purposes of the ESI have been stated by USEPA in a directive outlining site inspection performed under CERCLA. The directive states:

> The objective of the expanded site inspection (SI) is to provide documentation for the Hazard Ranking System (HRS) package to support National Priority List (NPL) rulemaking. Remaining HRS information requirements are addressed and site hypotheses not completely supported during previous investigations are evaluated. Expanded SI sampling is designed to satisfy HRS data requirements by documenting observed releases, observed contamination, and levels of actual contamination at targets. In addition, investigators collect remaining non-sampling information. Sampling during the expanded SI includes background and quality assurance/quality control samples to fully document releases and attribute them to the site. Following the expanded SI, USEPA site assessment managers assign the site a priority for HRS package preparation and proposal to the NPL.

USEPA Region V requested identification of sites during the ESI that may require removal action to remediate an immediate human health or environmental threat.

2.0 Site Background

2.1 Introduction

This section includes information obtained during the ESI and from reports of previous site activities.

2.2 Site Description

The former DeBoer Landfill occupies approximately 35 acres southwest of 105th Street and Harlem Avenue in Palos Hills, Cook County, Illinois (township 37N, range 12E, section 13) (Figure 2-1). The site is bounded by 105th Street on the north, Harlem Avenue on the east, Stony Creek on the south, and residences on the west (Figure 2-2). The Palos Hills Municipal Golf Course occupies most of the site; A&H Rentals and other businesses along Harlem Avenue occupy a small portion of the site. Land use in the surrounding area is mainly residential with some commercial use.

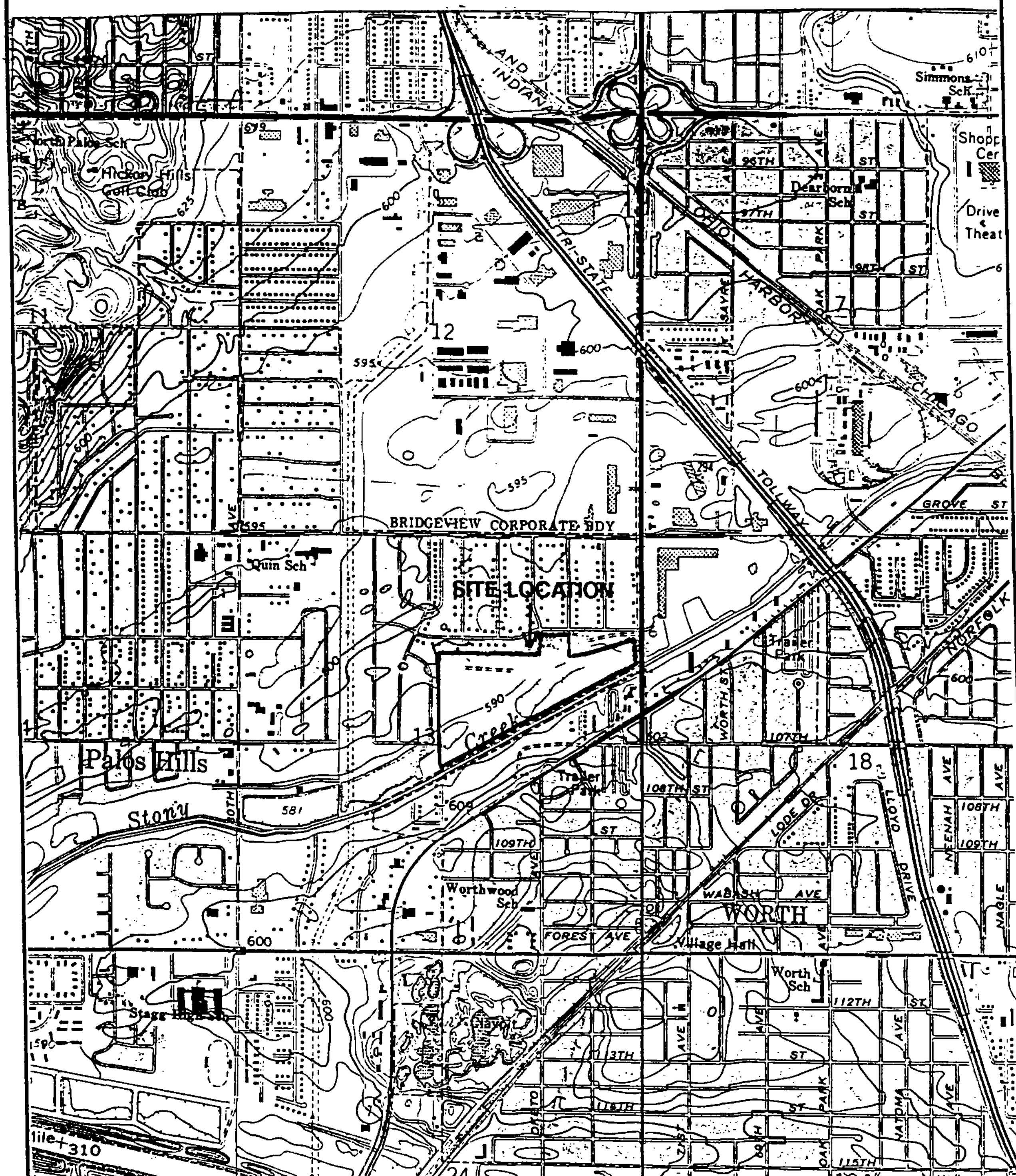
Runoff from the southern portion of the site generally flows to Stony Creek. Drainage ditches and culverts channel other runoff to City of Palos Hills sewers. The southern portion of the site is within the 100-year floodplain (FEMA 1990).

2.3 Site History

2.3.1 Operational History

Landfilling took place at the site from 1955 to 1973. No record of site activity before 1955 was found. The Chicago Ridge Landfill Co. (James G. DeBoer, registered agent) owned and operated the site until October 1972, when the firm merged with Waste Management of Illinois Inc. Site operations ceased in February 1973. No record of closure activities was found. In approximately 1977, James G. DeBoer donated the site to the City of Palos Hills. The site was developed into the Palos Hills Municipal Golf Course, which was completed in 1989 (C.C. Johnson & Malhotra 1987).

Wastes accepted at the site included paper, rags, tires, construction debris, incinerator ash, and general refuse. Resident complaints indicated drums and liquid tar have been landfilled onsite (IEPA 1988; MWRDGC 1992). No other



SOURCE: USGS, 1980

SCALE (IN MILES):

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FIGURE 2-1
SITE LOCATION MAP

DEBOER LANDFILL
PALOS HILLS, ILLINOIS

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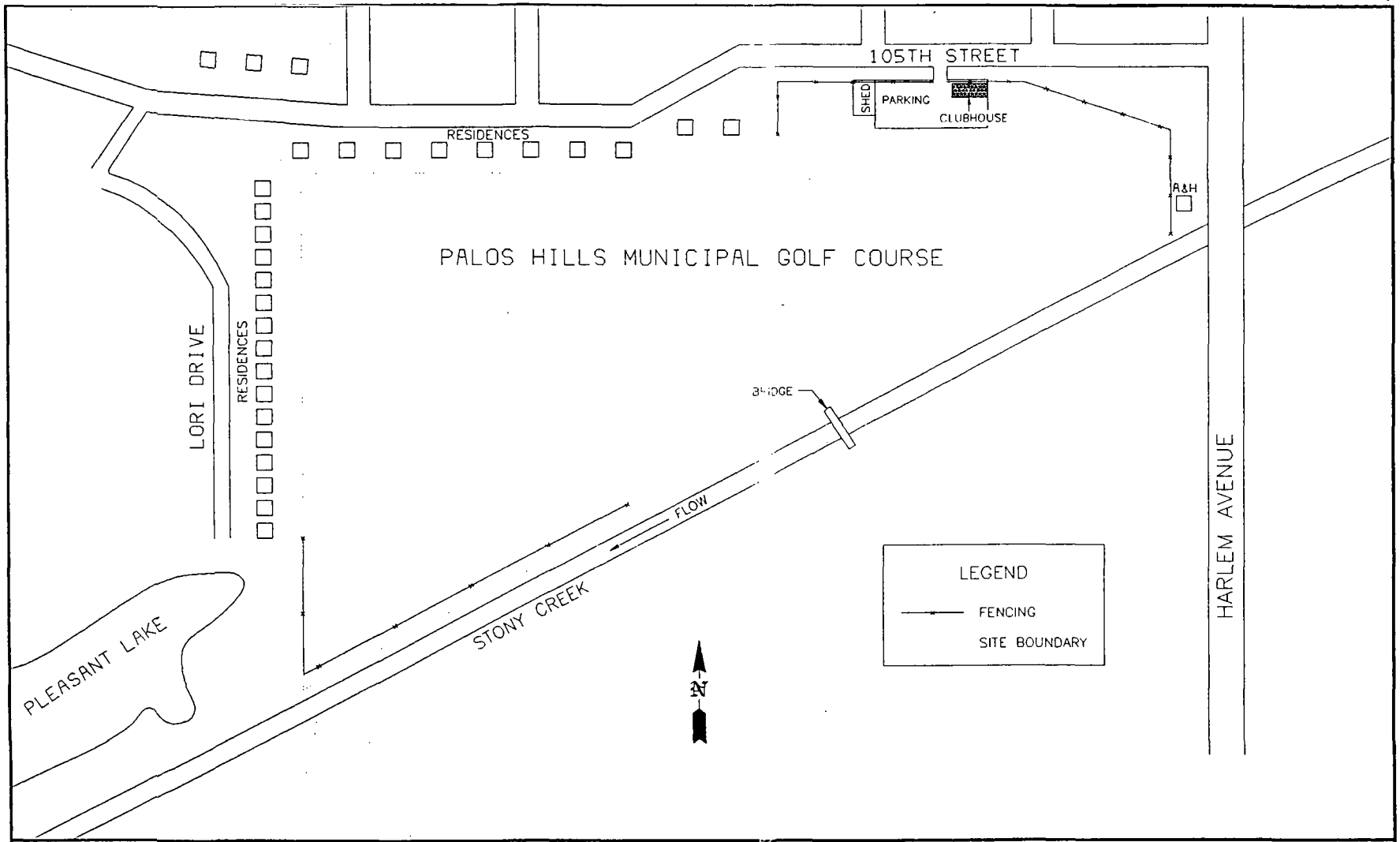

SOURCE: MODIFIED FROM USGS, 1980	FIGURE 2-2 SITE LAYOUT
SCALE: NOT TO SCALE	DEBOER LANDFILL PALOS HILLS, ILLINOIS

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record of wastes accepted at the site has been found. A soil and foundation engineering report shows waste fill to be between 10 and 32 feet thick.

In 1987, during construction of the golf course, construction debris, tree fragments, and excavated soils from offsite were dumped at the facility. The City of Palos Hills permitted this activity to acquire fill material at low cost.

2.3.2 Summary of Onsite Environmental Work

The site has a history of violations and resident complaints. In 1975, IEPA filed suit against Chicago Ridge Landfill Co. and Waste Management of Illinois, Inc. The suit cited five violations, including the following: causing or allowing open dumping, failing to apply final cover, and operating without a permit (IEPA 1973). The suit presented IEPA inspection reports and photographs as evidence to support these violations. The suit assessed a penalty of $5,000 and recommended closure activities. No record of payment of the fine or completion of closure activities was found. Resident complaints indicated drums have been landfilled onsite. No manifests or other records were available to address the allegations concerning buried drums.

IEPA completed a PA report concerning the site (including USEPA form 2070-12) dated May 31, 1984. The report indicated that the site accepted incinerator ash, demolition debris, and municipal refuse (IEPA 1984).

A USEPA field investigation team (FIT) completed a screening site inspection (SSI) report concerning the site (including USEPA form 2070-13) on December 24, 1987. Six soil samples were collected; analyses indicated 4,4'-DDD and heavy metals were present onsite at levels significantly above background.

IEPA collected one surface water and one waste sample at the site on April 8, 1992, apparently in response to resident complaints. Water was collected from a culvert draining runoff from the fourth green of the golf course. A black tar-like waste substance was collected from the parking lot of A&H Rentals, located at the southeastern corner of the site. The water sample was analyzed for heavy metals, and the waste sample was analyzed for volatile organic constituents (VOCs) and toxicity characteristic leaching procedure (TCLP) metals. Analyses indicated the presence of VOCs and heavy metals above detection limits. No background samples were collected.

2.4 Applicability of Other Statutes

No record of Resource Conservation and Recovery Act activity concerning the site has been found. In 1975, IEPA filed suit against Chicago Ridge Landfill Co. and Waste Management of Illinois, Inc. because of violations of the Illinois Environmental Protection Act. IEPA and the Office of the Attorney General of the State of Illinois recently were involved with the site in response to resident complaints. Site inspections and sampling have occurred in response to the complaints.

3.0 Site Inspection Activities and Analytical Results

3.1 Introduction

This section outlines the procedures used and observations made during the ESI conducted at the DeBoer Landfill site. Sampling activities were conducted in accordance with the quality assurance project plan (QAPjP) (BVWS 1991). Figure 3-1 shows each sample location; Table 3-1 summarizes sample descriptions and locations.

ESI samples were analyzed for organic and inorganic substances contained on the USEPA Target Compound List (TCL) and Target Analyte List (TAL) by USEPA Contract Laboratory Program (CLP) participant laboratories. Appendix B presents the TCL and TAL. Appendix C presents a summary of analytical data generated by ESI sampling. Appendix D contains photographs of the site and sample locations.

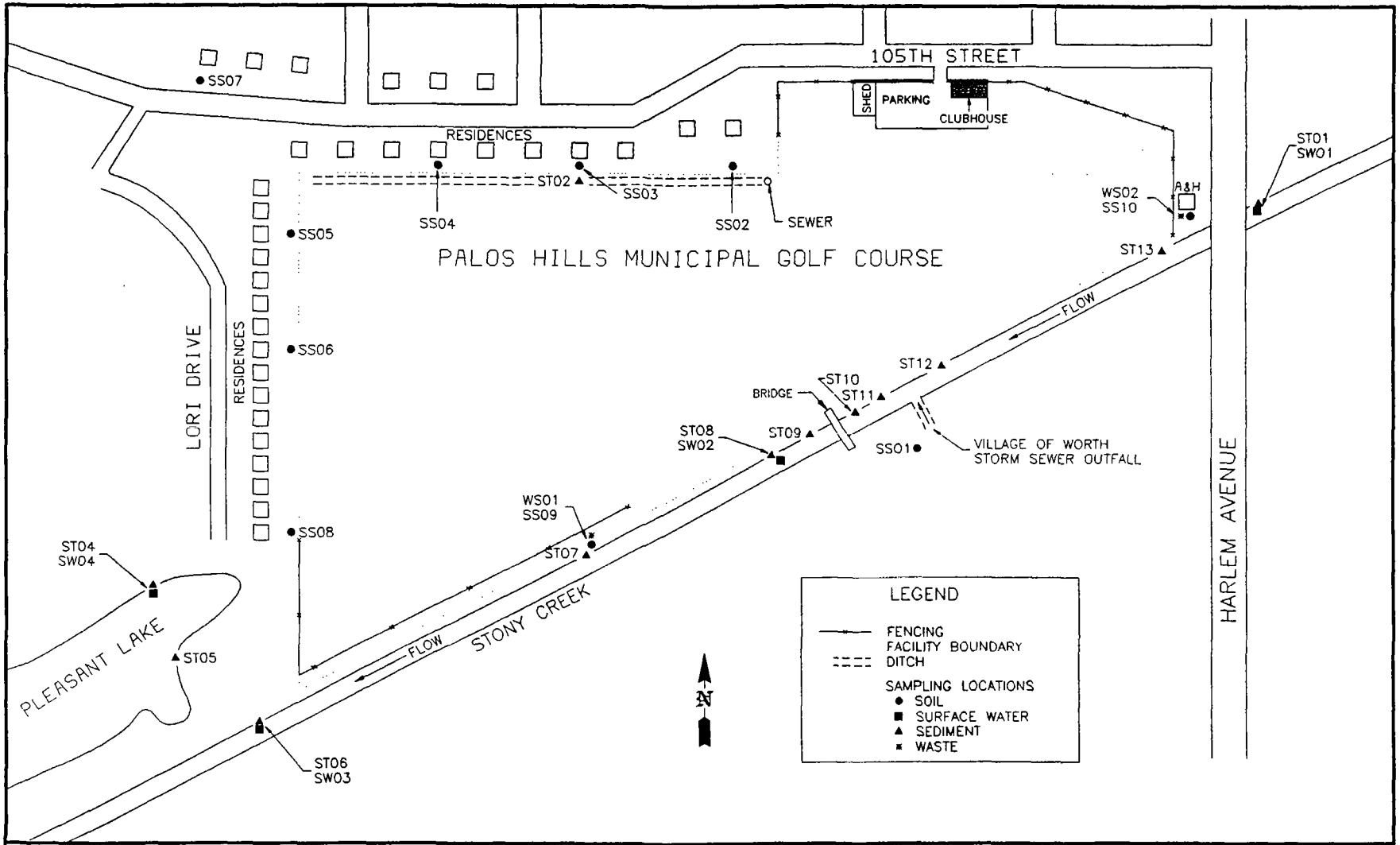
3.2 Site Reconnaissance

On April 8, 1993, a reconnaissance of the DeBoer Landfill site was conducted. This visit included a visual site inspection to determine the status, facility activities, health or safety hazards, and potential sampling locations.

The superintendant of the Palos Hills Municipal Golf Course and the owner of A&H Rentals were interviewed during the reconnaissance. A site walk-through was conducted and potential sampling locations were identified. Exposed wastes, including rusted drums, were observed near Stony Creek at the southwestern portion of the site. A blue granular substance was visible in one rusted drum. The reconnaissance team visited A&H Rentals, located at the southeastern corner of the site. Black tar-like waste was present on the parking lot near the southern exterior wall of the A&H building. This waste reportedly migrates to the surface during warm weather. A sheet of plywood had been placed over the area, which was approximately four feet by four feet.

3.3 Site Representative Interview

The site reconnaissance and interview were conducted on April 8, 1993. The interview began in the clubhouse of the Palos Hills Municipal Golf Course with Mr. Jay Druhan, Superintendent of Grounds for the course. Mr. Howard Chinn and Mr.



SOURCE: MODIFIED FROM USGS, 1980	FIGURE 3-1 SAMPLING LOCATIONS
SCALE: NOT TO SCALE	DEBOER LANDFILL PALOS HILLS, ILLINOIS

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Table 3-1
Sample Descriptions

Sample	Depth	Appearance	Location
SS01	0 to 6"	Black topsoil, slightly moist	Offsite, approximately 250 feet southeast of the golf course bridge across Stony Creek
SS02	6 to 12"	Dry brown clay	Residential property adjacent to the northern site border
SS03	6 to 12"	Black topsoil, slightly moist	Residential property adjacent to the northern site border, west of SS02
SS04	6 to 12"	Black topsoil, slightly moist	Residential property adjacent to the northern site border, west of SS03
SS05	6 to 12"	Dark brown topsoil, dry	Residential property adjacent to the western site border, near the northwestern corner of the site
SS06	6 to 12"	Black topsoil, moist	Residential property adjacent to the western site border, south of SS05
SS07	6 to 12"	Dark brown topsoil, dry	Just north of 105th Street, about 200 feet northwest of the northwestern corner of the site
SS08	6 to 12"	Black topsoil, moist	Residential property adjacent to the site, near the soutwestern corner of the site
SS09	6 to 12"	Dark brown topsoil, slightly damp, with some vegetation	About 5 feet south of the drum from which WS01 was collected, at the southwestern portion of the site.
SS10	6 to 12"	Brown clay, some sand and gravel	Just south of the A&H Rentals building, beneath oozing tar.
SW01	0 to 6"	Clear	In Stony Creek, just east (upstream) of the Harlem Avenue bridge across Stony Creek, same location as ST01.
SW02	0 to 6"	Clear	In Stony Creek, about 200 feet west of the golf course bridge, about 50 feet west of a stationary park bench, same location as ST08.
SW03	0 to 6"	Clear	In Stony Creek about 200 feet southwest (downstream) of the site, same location as ST06.

Table 3-1 (continued)			
Sample	Depth	Appearance	Location
SW04	0 to 6"	Clear	At the north bank of Pleasant Lake, just southwest of the site, same location as ST04.
ST01	0 to 6"	Silty sand, some gravel	In Stony Creek, just east (upstream) of the Harlem Avenue bridge across Stony Creek, same location as SW01.
ST02	0 to 6"	Gray silty clay, moist	In the ditch at the northern portion of the site, south of SS03 location.
ST04	0 to 6"	Black organic muck, some clay and gravel, wet	At the north bank of Pleasant Lake, just southwest of the site, same location as SW04.
ST05	0 to 6"	Black organic muck, some clay and gravel, wet	At the southeast bank of Pleasant Lake, just southwest of the site.
ST06	0 to 6"	Brown silty clay, some gravel, wet	In runoff pathway to Stony Creek about 200 feet southwest (downstream) of the site, same location as SW03.
ST07	0 to 6"	Brown silty clay,	In runoff pathway to Stony Creek near [illegible] debris, south of WS01
ST08	0 to 6"	Brown silty clay, wet	In runoff pathway to Stony Creek, about 200 feet west of the golf course bridge, about 50 feet west of a stationary park bench, same location as SW02.
ST09	0 to 6"	Brown silty clay, wet	In runoff pathway to Stony Creek, south and west of 8th tee of golf course, just west of the golf course bridge.
ST10	0 to 6"	Brown silty clay, wet	In runoff pathway to Stony Creek, just east of the golf course bridge.
ST11	0 to 6"	Brown silty clay, wet	In runoff pathway to Stony Creek, about fifty feet east of ST10.
ST12	0 to 6"	Brown silty clay, wet	In runoff pathway to Stony Creek, about 100 feet upstream of the Village of Worth storm sewer outfall.

Table 3-1 (continued)
Sample Descriptions

Sample	Depth	Appearance	Location
ST13	0 to 6"	Brown silty clay, wet	In runoff pathway to Stony Creek, about 100 feet west (downstream) of A & H rentals.
WS01	Surface	Blue granular material, damp	From a broken drum near Stony Creek at the southwestern portion of the site.
WS02	Surface	Black tar-like waste with brown leachate	Just south of the A&H Rentals building, where the waste migrates to the surface.

Joseph Annunzio of the Office of the Attorney General of the State of Illinois also attended. Mr. Chinn is Chief Engineer and Mr. Annunzio is an attorney for the Environmental Control Division. They have been involved with the site in response to past resident complaints. The reconnaissance team explained the purpose of the ESI to Mr. Druhan, toured the site, and gathered site-specific information. Mr. Druhan has been employed by the golf course since 1989. He was not involved with the site before his employment at the golf course.

3.4 Sampling Activities

The ESI field team collected surface water, sediment, and soil samples and the organic portion of waste samples on August 25 to 27, 1993. The field team returned to the site on September 2, 1993, to collect the inorganic portion of the waste samples. No split samples were collected.

Sample activities were conducted in accordance with procedures set forth in the QAPjP. Sample jars were sealed, labeled, packaged, and transported to USEPA CLP participant laboratories. Table 3-2 presents laboratory information according to media sampled and analyses performed.

Reusable sampling and personal protective equipment (PPE) were decontaminated before transport offsite. Disposable sampling and PPE items were discarded in accordance with procedures outlined in the ESI project work plan and the QAPjP.

3.4.1 Surface Water and Sediment Sampling

Four surface water samples and twelve sediment samples were collected during the ESI sampling. These samples were collected to determine whether the landfill is releasing significant amounts of hazardous substances to nearby surface water bodies. Three surface water samples (SW01,2,3) were collected from Stony Creek and one surface water sample (SW04) was collected from Pleasant Lake. Nine sediment samples (ST01,6,7,8,9,10,11,12,13) were collected from Stony Creek, in locations where runoff was observed to enter the creek. Two sediment samples (ST04,5) were collected from Pleasant Lake, and one sediment sample (ST02) was collected from an onsite ditch.

The background samples for surface water and sediment (SW01 and ST01) were collected at the same location: just east (upstream) of the Harlem Avenue bridge across Stony Creek, at the north bank of the creek.

Table 3-2 Laboratory Information		
Media	Analyses	Laboratory
Surface Water and Sediment	Organic	Encotec Ann Arbor, Michigan
	Inorganic	Southwest Labs of Oklahoma Broken Arrow, Oklahoma
Soil	Organic	Pace Laboratories Lenexa, Kansas
	Inorganic	ITMO - St. Louis Laboratory Earth City, Missouri
Waste	Organic	American Analytical and Technical Services, Inc. Broken Arrow, Oklahoma
	Inorganic	Ecotek Laboratory Services, Inc. Atlanta, Georgia

3.4.2 Soil Sampling

Ten soil samples were collected during the ESI sampling. Samples were collected at depths of less than two feet. Six soil samples (SS02,3,4,5,6,8) were collected on residential property within 200 feet of residences bordering the site. Two offsite background samples (SS01,7) were collected to aid in the attribution of site contaminants. SS01 was collected south of Stony Creek, about 250 feet southeast of the golf course bridge. SS07 was collected north of 105th Street, about 200 feet northwest of the northwestern corner of the site. Two soil samples (SS09,10) were collected near waste samples to aid in attributing release of these wastes to onsite soils. SS09 was collected near drum waste sample WS01 in the southwestern portion of the site, near Stony Creek. SS10 was collected near tar-like waste sample WS02, in the parking lot of A&H Rentals.

3.4.3 Waste Sampling

Two investigative waste source samples were collected to characterize exposed wastes observed onsite. One sample (WS01) was collected from a broken drum in the southwestern portion of the site, near Stony Creek. This drum was observed to contain a blue granular substance. One sample (WS02) of a black tar-like substance was collected from the parking lot of A&H Rentals, in the southeastern corner of the site. IEPA sampled the tar-like substance in 1992, but analyses were performed for volatile organic and TCLP metals analyses only.

3.5 Analytical Results

Appendix C presents ESI analytical data for surface water, soil, sediment, and waste samples.

3.6 Key Samples

"Key samples" are those samples that contain substances in sufficient concentrations exceeding background concentrations to document an observed release. Multiple background samples were used to determine soil and sediment key samples. Soil and sediment key samples meet or exceed key sample criteria for each background sample used in key sample evaluation. Table 3-3 identifies ESI key samples and associated background concentrations.

Table 3-3
Key Sample Summary

Sediment

Substance	Sample Number and Concentrations (ug/kg)											
	ST 01 (Back-ground)	ST 02	ST 04	ST 05	ST 06	ST 07	ST 08	ST 09	ST 10	ST 11	ST 12	ST 13
Acetone	3 J		22	40	23		80			29	66	
2-Butanone	2 J						20				18	
Butylbenzylphthalate	180 J						1200					
Ideno (1,2,3-cd) pyrene	690						2400					
Dibenzo (a,h) Anthracene	380 U						820				570	
Benzo (g,h,i) perylene	500						1900					
Gamma-BHC (Lindane)	2.0 UJ			7.4 JP								
Dieldrin	3.8 UJ								10 JP			
4,4'-DDE	3.8 UJ	44 J	53 J	12 J	20 J	8.3 J			29 J		9.1 J	
4,4'-DDD	3.8 UJ	8.6 JP	74 J	13 JP	240 DJ	13 JP	29 JP	14 JP	1100 JPD	25 JP	25 JP	18 JP
Endosulfan sulfate	3.8 UJ										9.6 JP	9.4 J
4,4'-DDT	3.8 UJ	39 J	17 J	21 J	10 JP	22 J	9.9 JP		80 J	7.9 JP	27 J	21 J
Alpha-chlordane	2.0 UJ				8.6 J		6.9 JP		13 J	6.3 J	6.4 J	
Gamma-chlordane	2.0 UJ				7.0 J		5.5 J		11 J	5.0 J	5.7 J	
Aroclor-1254	38 UJ				110 JP		89 J		180 JP	79 J		

Table 3-3 (continued)
Key Sample Summary

Sediment (continued)

Substance	Sample Number and Concentrations (mg/kg)											
	ST 01 (Back-ground)	ST 02	ST 04	ST 05	ST 06	ST 07	ST 08	ST 09	ST 10	ST 11	ST 12	ST 13
Arsenic	4.3		13.6					14.3	15.6			
Cadmium	0.47 UJN						1.4 JBN		0.96 JBN	1.8 JN	1.6 JBN	
Cobalt	2.9 B		11.4 B	9.2 B				11.4 B				
Mercury	0.12 U				0.19		0.23	0.16	0.33	0.20	0.26	0.24
Nickel	6.8 B		26.9	21.5	24.0			25.9	26.4			
Potassium	738 B			3270				2400				
Silver	0.71 U								1.8 B			
Cyanide	0.59 U						1.2			0.95	1.3	0.88

Table 3-3 (continued)
Key Sample Summary

Surface Water

Substance	Sample Number and Concentrations (ug/L)	
	SW 01 (Background)	SW 04
Potassium	2730 B	8680 B

Table 3-3 (Continued)

Soil (concentrations in ug/kg)

Substance	Sample Number						
	SS01	SS07	SS03	SS06	SS08	SS09	SS10
	Background						
Benzo(a)Anthracene	400 U	430 U		530 J		680 J	
Benzo(b)Fluoranthene	400 U	430 UJ				980 J	
Ideno(1,2,3-cd)Pyrene	400 U	430 U				490 J	
Aldrin	0.6 J	2.2 U				3.6	
Dieldrin	2.4 JP	0.98 JP				15	
4,4'-DDE	49	11 P	220 JD				
4,4'-DDD	17 P	4.3 U				96 JD	
Alpha-Chlordane	1.6 JP	2.2 U			70 JD		
Gamma Chlordane	1.5 JP	2.2 U				10 P	
Aroclor-1254	40 U	43 U			610 JP	320	
(concentrations in mg/kg)							
Cadmium	0.69 U	1.1 B			11.3		
Chromium	14.9	17.7			134		
Copper	25.2	27.7			113	114	
Mercury	0.6 U	0.07 U			0.62	0.10 B	
Silver	0.84 U	0.89 U			1.6 B		
Sodium	119 B	76.6 B					740 B
Cyanide	0.09 U	0.21 B			3.0	2.9	

J - Reported value is estimated.
U - Substance is undetected. The reported value is the contract required quantitation limit (CRQL) for organics or contract required detection limit (CRDL) for inorganics.
N - Spiked sample recovery not within control limits.
B - Reported value is less than the CRDL, but greater than or equal to the instrument detection limit (IDL).
P - This flag is used for a pesticide Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported and flagged with a "P."
D - This flag is used for compounds identified in an analysis at a secondary dilution factor.

4.0 Characterization of Sources

4.1 Introduction

The two sources at the DeBoer Landfill are the landfill and contaminated soil.

4.2 Landfill

4.2.1 Description

The DeBoer Landfill site is an inactive landfill that covers approximately 35 acres. The Palos Hills Municipal Golf Course and businesses along Harlem Avenue occupy the site. The landfill, which does not have an engineered liner or leachate collection system, operated from 1955 until 1973. No manifests of wastes accepted or record of closure activity has been found.

4.2.2 Waste Characteristics

The landfill reportedly accepted incinerator ash, demolition debris, and municipal refuse. Resident complaints indicated that drums were landfilled onsite. A black tar-like substance was observed to be migrating to the surface of the parking lot of A&H rentals, located at the southeastern corner of the former landfill. No record was found concerning the landfilling of drums or tar at the site.

Two investigative waste source samples (WS01, WS02) were collected to characterize exposed wastes observed onsite. WS01 was a bluish granular substance collected from a broken drum at the southwestern portion of the site near Stony Creek. Twenty inorganic analytes were detected in WS01, including the following (with concentrations in ppm): Cadmium, 29.1; Chromium, 24.3; Lead, 60.6; Manganese, 107; Nickel, 47.6; Silver, 134; Vanadium, 27.2; and Cyanide, 0.38. WS02 was a black tar-like substance that migrated to the surface of A&H Rentals parking lot at the southeastern corner of the site. Four semivolatile organics and eighteen inorganic analytes were detected in WS02, including the following metals (with concentrations in ppm): Arsenic, 1.6; Cadmium, 14.3; Chromium, 9.8; Lead, 14,100; Manganese, 24.7; Mercury, 0.27; Nickel, 11.5; and Vanadium, 2.0.

4.3 Waste Source: Contaminated Soil

4.3.1 Description

Analyses of ESI soil samples indicate approximately 21 acres (920,000 sq. ft.) of soil contain, to some extent, an observed release. This area is defined by the key sample locations (SS03,6,8,9,10)that document the observed release. SS03, SS06, and SS08 were collected on residential property outside the northern and western site boundaries. SS09 was collected near Stony Creek at the southwestern portion of the site, near WS01. SS10 was collected near WS02, at A&H Rentals, at the southeastern corner of the site.

Analyses of five SSI soil samples collected in 1987 indicate an observed release. The area of soil contamination defined by the SSI surficial samples is contained within the area described by ESI soil samples.

4.3.2 Waste Characteristics

ESI analytical results indicate the area of affected soil contains releases of five semivolatile organics, seven pesticide/PCBs, and seven inorganic analytes in concentrations ranging from 3.6 parts per billion (ppb) to 740 ppm. Table 3-3 indicates substances detected in key samples and their associated concentrations.

The area of affected soil defined by the SSI analytical results contained releases of 4,4'-DDD and metals ranging from 0.35 to 10,000 ppm.

5.0 Discussion of Migration Pathways

5.1 Introduction

This section includes information useful in analyzing the potential impact of contaminants found at the DeBoer Landfill site on the four migration pathways: groundwater, surface water, air, and soil.

5.2 Groundwater

The groundwater pathway was not sampled during the ESI. No documented releases to groundwater have been attributed to the site.

The site poses little threat to drinking water supplies. Nearly all of the population within four miles of the site is supplied by treated water from Lake Michigan (BVWS 1993). The potential exists for hazardous substances to migrate from the site to groundwater in the glacial drift. No drinking water wells screened in the glacial drift aquifer are within one mile of the site, and very few glacial drift wells are within four miles of the site. Approximately 6,000 private well users within four miles of the site are supplied by the Silurian Dolomite bedrock aquifer (ISWS 1993). These users are unlikely to be affected by the site. Most of the population supplied by the bedrock aquifer is greater than one mile from the site (USDOC, 1990). A low-permeability layer is present between potential contaminants and the bedrock aquifer (Testing Service Corporation 1980). Table 5-1 summarizes the drinking water population within four miles of the site.

Hazardous substances potentially present in the glacial drift aquifer may be migrating to Stony Creek and Pleasant Lake. Surface water and sediment sampling in Stony Creek and Pleasant Lake addresses this threat to the surface water pathway.

Table 5-1 Private Well Users Within Four Miles of the Site	
Radial Distance from Site (in miles)	Approximate Population Supplied by Private Wells
0 to 1/4	8
1/4 to 1/2	8
1/2 to 1	64
1 to 2	1501
2 to 3	2773
3 to 4	1656
Total Population	6010

5.3 Surface Water

Stony Creek, which forms the southern boundary of the site, is the probable point of entry of potential contaminants into the surface water pathway. Approximately 1.5 miles downstream, Stony Creek flows into the Calumet Sag Channel, which flows for more than 15 miles downstream of the site. Pleasant Lake lies within 200 feet of the southwestern corner of the site.

Potential contaminants may enter Pleasant Lake by runoff or flooding. A ditch drains the northwestern portion of the site into a sewer. It is unknown whether this sewer drains to surface water bodies. No sewer outfalls draining the site were observed to enter Stony Creek or Pleasant Lake. Runoff from the southern portion of the site generally flows to Stony Creek. Drainage ditches and culverts channel other runoff to City of Palos Hills sewers. The southern portion of the site is in the 100-year floodplain (FEMA 1990).

Four surface water samples and twelve sediment samples were collected during the ESI sampling. One inorganic analyte was detected at concentrations significantly above background in one surface water sample (SW04) collected from Pleasant Lake. Surface water analyses from Stony Creek showed no hazardous substances at concentrations significantly greater than background levels. Two volatile organics, four semivolatile organics, nine pesticide/PCBs and eight inorganic analytes were detected at concentrations significantly above background levels in eight sediment samples (ST06,7,8,9,10,11,12,13)collected from Stony Creek. One volatile organic, four pesticides and four inorganic analytes were detected at concentrations significantly above background levels in the two sediment samples collected from Pleasant Lake (ST04,5). Three pesticides were detected at concentrations significantly above background in the sediment sample (ST02) collected from the onsite ditch that drains the northwestern portion of the site. The background samples for surface water and sediment (SW01 and ST01) were collected at the same location: just east (upstream) of the Harlem Avenue bridge across Stony Creek, at the northern bank of the creek.

The Village of Worth is south of Stony Creek and discharges storm sewer effluent to Stony Creek. The Village of Worth storm sewer outfall discharges into Stony Creek directly south of the site. Two volatiles, one semi-volatile, six pesticides, and three inorganic analytes were detected in the two sediment samples (ST12, 13) located upstream of the outfall.

Stony Creek, Pleasant Lake, and the Calumet Sag Channel are considered wetlands and potential fisheries (USDI 1984).

5.4 Air

No releases to the air pathway attributable to the site are on record. No air sampling was conducted during ESI field activities. During ESI sampling activities, air monitoring with a flame ionization detector showed no readings above background.

5.5 Soil

During the ESI sampling, ten surficial soil samples were collected, from depths of less than two feet.

ESI analytical results indicate the area of affected soil contains releases of three semivolatile organics, seven pesticide/PCBs, and seven inorganic analytes. This area is defined by the key sample locations (SS03,6,8,9,10) that document the observed release. SS03, SS06 and SS08 were collected on residential property outside the northern and western site boundaries. SS09 was collected near WS01 and Stony Creek, at the southwestern portion of the site. SS10 was collected near WS02, at A&H Rentals, located at the southeastern corner of the site.

Approximately 20 workers at the golf course and businesses along Harlem Avenue may be affected by exposure to substances detected in ESI soil samples. Ten residential properties are considered to be within the area defined by soil samples SS03, SS06, SS08, SS09, and SS10. Twenty-seven residents may be affected by this area, assuming 2.65 persons per residence for Worth Township. Within one mile of the site, the population is estimated to be 18,546 persons. This estimate was based on apportionment of surrounding municipalities, as well as counting of houses (U.S. Dept. of Commerce, 1990; USGS, 1980).

The Palos Hills Municipal Golf Course is partially fenced. Residential and golf course fencing is in place along the northern, eastern, and southwestern site boundaries. The course is contiguous with residential property on the west; approximately two thirds of Stony Creek is unfenced along the southern site boundary.

6.0 References

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Appendix A

DeBoer Landfill

Site 4-Mile Radius Map

and

15-Mile Surface Water Route Map

SDMS US EPA Region V

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4 MILE RADIUS MAP

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15 MILE DOWNSTREAM MAP

Appendix B

DeBoer Landfill

Target Compound List and Target Analyte List

Target Compound List

Volatiles

Chloromethane
Bromomethane
Vinyl Chloride
Chloroethane
Methylene Chloride
Acetone
Carbon Disulfide
1,1-Dichloroethene
1,1-Dichloroethane
1,2-Dichloroethene (total)
Chloroform
1,2-Dichloroethane
2-Butanone
1,1,1-Trichloroethane
Carbon Tetrachloride
Bromodichloromethane
1,2-Dichloropropane
Cis-1,3-Dichloropropene
Trichloroethene
Dibromochloromethane
1,1,2-Trichloroethane
Benzene
trans-1,3-Dichloropropane
Bromoform
4-Methyl-2-pentanone
2-Hexanone
Tetrachloroethene
Toluene
1,1,2,2-Tetrachloroethane
Chlorobenzene
Ethyl benzene
Styrene
Xylenes (total)

Source: Target Compound List for water and soil with low or medium levels of volatile and semi-volatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Target Compound List (Continued)

Semi-Volatiles

Phenol	Acenaphthene
bis(2-Chloroethyl) ether	2,4-Dinitrophenol
2-Chlorophenol	4-Nitrophenol
1,3-Dichlorobenzene	Dibenzofuran
1,4-Dichlorobenzene	2,4-Dinitrotoluene
1,2-Dichlorobenzene	Diethylphthalate
2-Methylphenol	4-Chlorphenyl-phenyl ether
2,2-oxybis-(1-Chloropropane) *	Fluorene
4-Methylphenol	4-Nitroaniline
N-Nitroso-di-n-dipropylamine	4,6-Dinitro-2-methylphenol
Hexachloroethane	N-Nitrosodiphenylamine
Nitrobenzene	4-Bromophenyl-phenyl ether
Isophorone	Hexachlorobenzene
2-Nitrophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenanthrenel
bis(2-Chloroethoxy) methane	Anthracene
2,4-Dichlorophenol	Carbazole
1,2,4-Trichlorobenzene	Di-n-butylphthalate
Naphthalene	Fluoranthene
4-Chloroaniline	Pyrene
Hexachlorobutadiene	Butyl benzyl phthalate
4-Chloro-3-methylhenol	3,3-Dichlorbenzidine
2-Methylnaphthalene	Benzo(a)anthracene
Hexachlorocyclopentadiene	Chrysene
2,4,6-Trichlorophenol	bis(2-Ethylhexyl)phthalate
2,4,5-Trichlorophenol	Di-n-Octyphthalate
2-Chloronephthalene	Benzo(b)fluoranthene
2-Nitroaniline	Benzo(k)fluoranthene
Dimethylphthalate	Benzo(a)pyrene
Acenaphthylene	Indeno(1,2,3-cd)pyrene
2,6-Dinitrotoluene	Dibenzo(a,h)anthracene
3-Nitroaniline	Benzo(g,h,i)perylene

*Previously known by the name of bis(2-chlorousipropyl) ether.

Source: Target Compound List for water and soil with low or medium levels of volatile and semi-volatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Target Compound List (Continued)

Pesticide/PCB

alpha-BHC	4,4-DDT
beta-BHC	Methoxychlor
delta-BHC	Endrin ketone
gamma-BHC (Lindane)	Endrin aldehyde
Heptachlor	alpha-chlordane
Aldrin	gamma-chlordane
Heptachlor epoxide	Toxaphene
Endosulfan I	Aroclor-1016
Dieldrin	Aroclor-1221
4,4-DDE	Aroclor-1232
Endrin	Aroclor-1242
Endosulfan II	Aroclor-1248
4,4-DDD	Aroclor-1254
Endosulfan sulfate	Aroclor-1260

Source: Target Compound List for water and soil containing less than high concentrations of pesticides/aroclors, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Target Analyte List

Aluminum	Magnesium
Antimony	Manganese
Arsenic	Mercury
Barium	Nickel
Beryllium	Potassium
Cadmium	Selenium
Calcium	Silver
Chromium	Sodium
Cobalt	Thallium
Copper	Vanadium
Iron	Zinc
Lead	Cyanide

Source: Target Analyte List in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, BVWST, September 27, 1991.

Appendix C

DeBoer Landfill

Analytical Results

Appendix C

Table of Contents

Data Reporting Qualifiers
Definitions for Organic Chemical Data Qualifiers

R - Indicates that the data are unusable. The compound may or may not be present.

U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N - Indicates presumptive evidence of a compound. This flag is only used for TICs where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, the N code is not used.

P - This flag is used for a pesticide Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported and flagged with a "P".

C - This flag applies to results where identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag must be used for a TIC as well as for a positively identified TCL compound

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for the specific analysis. This flag will not apply to pesticide/PCBs analyzed by GC/MS methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - Other specific flags may be required to properly define the results. The "X" flags are fully described on the data tables.

Data Reporting Qualifiers
Definitions for Inorganic Chemical Data Qualifiers

R - Indicates that the data are unusable. The compound may or may not be present.

U - Indicates compound was analyzed for but not detected. The associated numerical value is the sample quantititaion limit.

J - Indicates an estimated value.

B - Indicates that the reported value is less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).

E - The reported value is estimated because of the presence of interference.

M - Duplicate injection precision criteria not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis was not within control limits.
+ - Correlation coefficient for the MSA was less than 0.995.

Volatile Organic Analysis for Surface Water Samples
DeBoer Landfill

Volatile Compound	Sample Locations and Number Concentrations in ug/L			
	SW01 Background	SW02	SW03	SW04
Chloromethane	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U
Methylene Chloride	10 UJB	10 UJB	10 UJB	10 UJB
Acetone	10 UJB	10 UJB	4 J	10 UJB
Carbon Disulfide	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U
Chloroform	3 J	2 J	2 J	10 U
1,2-Dichloroethane	10 U	10 U	10 U	10 U
2-Butanone	10 UJB	10 UJB	2 J	10 UJB
1,1,1-Trichloroethane	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10 U	10 U	10 U	10 U
Bromodichloromethane	2 J	1 J	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U
Dibromochloromethane	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U
Benzene	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U
Chlorobenzene	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U
Total Number of TICS *	0	0	0	0

* Number, not concentrations, of tentatively identified compounds (TICs).

sw-volat

Semi-volatile Organic Analysis for Surface Water Samples DeBoer Landfill				
Semi-volatile Compound	Sample Location and Number Concentrations in ug/L			
	SW01 Background	SW02	SW03	SW04
Phenol	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	10 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	10 U	10 U
n-Nitroso-Di-n-Propylamine	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U
2-Nitrophenol	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)Methane	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10 UJ	10 U	10 U	10 U
2-Methylnaphthalene	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	25 U	25 U	25 U	25 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U
2-Nitroaniline	25 U	25 U	25 U	25 U
Dimethyl Phthalate	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U
3-Nitroaniline	25 U	25 U	25 U	25 U
Acenaphthene	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	25 UJ	25 U	25 U	25 U
4-Nitrophenol	25 UJ	25 U	25 U	25 U
Dibenzofuran	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U
4-Nitroaniline	25 UJ	25 UJ	25 UJ	25 UJ
4,6-Dinitro-2-Methylphenol	25 U	25 U	25 U	25 U
n-Nitrosodiphenylamine	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U

Semi-volatile Organic Analysis for Surface Water Samples DeBoer Landfill				
Semi-volatile Compound	Sample Location and Number Concentrations in ug/L			
	SW01 Background	SW02	SW03	SW04
Hexachlorobenzene	10 U	10 U	10 U	10 U
Pentachlorophenol	25 U	25 U	25 U	25 U
Phenanthrene	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U	10 U
di-n-Butylphthalate	26 UB	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 UJ	10 UJ	10 UJ	10 UJ
Benzo(a)Anthracene	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	10 UJB	10 UJB	10 UJB	10 UJB
di-n-Octyl Phthalate	10 U	10 U	10 U	10 U
Benzo(b)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(a)Pyrene	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U	10 U
Dibenzo(a,h)Anthracene	10 U	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U	10 U
Total Number of TICs *	2	0	1	4

* Number, not concentration, of tentatively identified compounds (TICs).

sw-semiv

Semi-volatile Organic Analysis for Surface Water Samples Tentatively Identified Compounds Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Sample SW01			
Unknown Siloxane	14.87	5	UJB
Unknown Siloxane	17.98	3	UJB
Sample SW03			
Unknown	10.52	2	J
Sample SW04			
Unknown	24.42	4	J
Unknown Organic Acid	24.67	3	J
Unknown	26.73	6	J
Unknown	32.20	5	J

Pesticide/PCB Analysis for Surface Water Samples
DeBoer Landfill

Pesticide/ PCB	Sample Locations and Number Concentrations in ug/L			
	SW01 Background	SW02	SW03	SW04
Alpha-BHC	0.050 U	0.050 U	0.050 U	0.050 U
Beta-BHC	0.050 U	0.050 U	0.050 U	0.050 U
Delta-BHC	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-BHC (Lindane)	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	0.050 U	0.050 U	0.050 U	0.050 U
Endolsulfan I	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDE	0.10 U	0.10 U	0.10 U	0.10 U
Endrin	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDD	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor	0.50 U	0.50 U	0.50 U	0.50 U
Endrin Ketone	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	0.10 U	0.10 U	0.10 U	0.10 U
Alpha-Chlordane	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-Chlordane	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor-1016	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	1.0 U	1.0 U	1.0 U	1.0 U

swpest.wk4

Inorganic Analysis for Surface Water Samples
DeBoer Landfill

Metals and Cyanide	Sample Locations and Number Concentrations in ug/L			
	SW01 Background	SW02	SW03	SW04
Aluminum	299	272	261	237
Antimony	19.0 U	19.0 U	19.0 U	19.0 U
Arsenic	3.0 U	3.0 U	3.0 U	3.0 U
Barium	42.2 B	33.4 B	33.4 B	67.7 B
Beryllium	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	2.0 U	2.0 U	2.0 U	2.0 U
Calcium	64900 J	51200 J	48800 J	42100 J
Chromium	4.0 U	4.0 U	4.0 U	4.0 U
Cobalt	5.0 U	5.0 U	5.0 U	5.0 U
Copper	3.0 U	3.0 U	3.0 U	3.0 U
Iron	525 JE	426 JE	413 JE	758 JE
Lead	4.4	3.3	4.6	4.1
Magnesium	24200	18500	17700	35800
Manganese	64.9 J	42.9 J	53.3 J	56.5 J
Mercury	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	21.0 U	21.0 U	21.0 U	21.0 U
Potassium	2730 B	2840 B	2590 B	8680 B
Selenium	4.0 U	4.0 U	4.0 U	4.0 U
Silver	3.0 UJN	3.0 UJN	3.0 UJN	3.0 UJN
Sodium	52800 J	41100 J	38900 J	51100 J
Thallium	7.0 U	7.0 U	7.0 U	7.0 U
Vanadium	6.0 U	6.0 U	6.0 U	6.0 U
Zinc	24.8	23.0	31.6	7.0 U
Cyanide	10.0 U	10.0 U	10.0 U	10.0 U

swmetals

Volatile Organic Analysis for Sediment Samples DeBoer Landfill												
Volatile Compound	Sample Locations and Number / Concentration in ug/kg											
	ST01 Background	ST02	ST04	ST05	ST06	ST07	ST08	ST09	ST10	ST11	ST12	ST13
Chloromethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Bromomethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Vinyl Chloride	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Chloroethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Methylene Chloride	12 UJB	14 UJB	21 UJB	14 UJB	16 UJB	12 UJB	20 UJB	13 UJB	16 UJB	18 UJB	15 UJB	13 UJB
Acetone	3 J	11 J	22	40	23	12 U	80	6 J	15 J	29	66	7 J
Carbon Disulfide	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,1-Dichloroethene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,1-Dichloroethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,2-Dichloroethene (total)	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Chloroform	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,2-Dichloroethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
2-Butanone	2 J	4 J	9 J	9 J	16 U	12 U	20	13 U	5 J	9 J	18	3 J
1,1,1-Trichloroethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Carbon Tetrachloride	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Bromodichloromethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,2-Dichloropropane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
cis-1,3-Dichloropropene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Trichloroethene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Dibromochloromethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,1,2-Trichloroethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Benzene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
trans-1,3-Dichloropropene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Bromoform	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
4-Methyl-2-Pentanone	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
2-Hexanone	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Tetrachloroethene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
1,1,2,2-Tetrachloroethane	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Toluene	2 J	14 U	21 U	2 J	2 J	2 J	3 J	2 J	16 U	3 J	3 J	2 J
Chlorobenzene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Ethylbenzene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Styrene	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Xylene (total)	12 U	14 U	21 U	14 U	16 U	12 U	20 U	13 U	16 U	18 U	15 U	13 U
Total Number of TICS *	0	0	0	0	0	0	0	0	0	1	1	0

* Number, not concentrations, of tentatively identified compounds (TICs).

sed-vol

Volatile Organic Analysis for Sediment Samples
Tentatively Identified Compounds

Concentrations in ug/kg

Compound Name	Retention Time	Estimated Concentration
Sample ST11		
Thiobismethane	3.98	13 JN
Sample ST12		
Thiobismethane	3.97	55 JN

sedvtic

Semi-volatile Organic Analysis for Sediment Samples
DeBoer Landfill

Semi-Volatile Compound	Sample Location and Number / Concentrations in ug/kg				
	ST01 Background	ST02	ST04	ST05	ST06
Phenol	380 U	460 U	700 U	460 U	520 U
bis(2-Chloroethyl)Ether	380 U	460 U	700 U	460 U	520 U
2-Chlorophenol	380 UJ	460 U	700 U	460 U	520 U
1,3-Dichlorobenzene	380 U	460 U	700 U	460 U	520 U
1,4-Dichlorobenzene	380 UJ	460 U	700 U	460 U	520 U
1,2-Dichlorobenzene	380 U	460 U	700 U	460 U	520 U
2-Methylphenol	380 U	460 U	700 U	460 U	520 U
2,2'-oxybis(1-Chloropropane)	380 U	460 U	700 U	460 U	520 U
4-Methylphenol	380 U	460 U	700 U	460 U	520 U
n-Nitroso-Di-n-Propylamine	380 U	460 U	700 U	460 U	520 U
Hexachloroethane	380 U	460 U	700 U	460 U	520 U
Nitrobenzene	380 U	460 U	700 U	460 U	520 U
Isophorone	380 U	460 U	700 U	460 U	520 U
2-Nitrophenol	380 U	460 U	700 U	460 U	520 U
2,4-Dimethylphenol	380 U	460 U	700 U	460 U	520 U
bis(2-Chloroethoxy)Methane	380 U	460 U	700 U	460 U	520 U
2,4-Dichlorophenol	380 U	460 U	700 U	460 U	520 U
1,2,4-Trichlorobenzene	380 UJ	460 U	700 U	460 U	520 U
Naphthalene	120 J	460 U	700 U	460 U	520 U
4-Chloroaniline	380 U	460 U	700 U	460 U	520 U
Hexachlorobutadiene	380 U	460 U	700 U	460 U	520 U
4-Chloro-3-Methylphenol	380 UJ	460 U	700 U	460 U	520 U
2-Methylnaphthalene	170 J	460 U	700 U	460 U	520 U
Hexachlorocyclopentadiene	380 U	460 U	700 U	460 U	520 U
2,4,6-Trichlorophenol	380 U	460 U	700 U	460 U	520 U
2,4,5-Trichlorophenol	930 U	1100 U	1700 U	1100 U	1200 U
2-Chloronaphthalene	380 U	460 U	700 U	460 U	520 U
2-Nitroaniline	930 U	1100 U	1700 U	1100 U	1200 U
Dimethyl Phthalate	380 U	460 U	700 U	460 U	520 U
Acenaphthylene	20 J	460 U	700 U	460 U	520 U
2,6-Dinitrotoluene	380 U	460 U	700 U	460 U	520 U
3-Nitroaniline	930 U	1100 U	1700 U	1100 U	1200 U
Acenaphthene	450	460 U	700 U	41 J	56 J
2,4-Dinitrophenol	930 UJ	1100 UJ	1700 UJ	1100 UJ	1200 U
4-Nitrophenol	930 UJ	1100 U	1700 U	1100 U	1200 UJ
Dibenzofuran	310 J	460 U	700 U	28 J	40 J
2,4-Dinitrotoluene	380 U	460 U	700 U	460 U	520 U
Diethylphthalate	380 U	460 U	700 U	460 U	520 U
4-Chlorophenyl-phenylether	380 U	460 U	700 U	460 U	520 U
Fluorene	600	460 U	700 U	27 J	51 J
4-Nitroaniline	930 UJ	1100 UJ	1700 UJ	1100 UJ	1200 UJ
4,6-Dinitro-2-Methylphenol	930 U	1100 U	1700 U	1100 U	1200 U
n-Nitrosodiphenylamine	380 U	460 U	700 U	460 U	520 U
4-Bromophenyl-phenylether	380 U	460 U	700 U	460 U	520 U

Semi-volatile Organic Analysis for Sediment Samples
DeBoer Landfill

Semi-Volatile Compound	Sample Location and Number / Concentrations in ug/kg				
	ST01 Background	ST02	ST04	ST05	ST06
Hexachlorobenzene	380 U	460 U	700 U	460 U	520 U
Pentachlorophenol	930 U	1100 U	1700 U	1100 U	1200 U
Phenanthrene	6300 D	460 U	64 J	670	390 J
Anthracene	800	460 U	700 U	45 J	82 J
Carbazole	680	460 U	700 U	86 J	63 J
di-n-Butylphthalate	380 U	680 UB	700 UJB	460 UJB	520 U
Fluoranthene	8200 D	43 J	160 J	990	980
Pyrene	5300 D	35 J	170 J	660	680
Butylbenzylphthalate	180 J	460 U	700 U	460 U	520 U
3,3'-Dichlorobenzidine	380 UJ	460 UJ	700 UJ	460 UJ	520 UJ
Benzo(a)Anthracene	2600	460 U	70 J	290 J	410 J
Chrysene	3000	460 U	110 J	380 J	490 J
bis(2-Ethylhexyl)Phthalate	1500 B	500 UB	700 UJB	2500 B	1300 B
di-n-Octyl Phthalate	380 U	460 U	700 U	460 U	43 J
Benzo(b)Fluoranthene	6500 D	28 J	88 J	480	780
Benzo(k)Fluoranthene	380 U	460 U	700 U	460 U	520 U
Benzo(a)Pyrene	1900	460 U	42 J	260 J	360 J
Indeno(1,2,3-cd)Pyrene	690	460 U	700 U	190 J	160 J
Dibenzo(a,h)Anthracene	380 U	460 U	700 U	64 J	48 J
Benzo(g,h,i)Perylene	500	460 U	700 U	180 J	120 J
Total Number of TICs	20	20	20	20	20

sed-sv

Semi-volatile Organic Analysis for Sediment Samples
DeBoer Landfill

Semi-Volatile Compound	Sample Location and Number / Concentrations in ug/kg						
	ST07	ST08	ST09	ST10	ST11	ST12	ST13
Phenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
bis(2-Chloroethyl)Ether	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2-Chlorophenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
1,3-Dichlorobenzene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
1,4-Dichlorobenzene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
1,2-Dichlorobenzene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2-Methylphenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2,2'-oxybis(1-Chloropropane	390 U	650 U	430 U	520 U	600 U	500 U	430 U
4-Methylphenol	390 U	650 U	370 J	520 U	600 U	500 U	430 U
n-Nitroso-Di-n-Propylamine	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Hexachloroethane	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Nitrobenzene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Isophorone	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2-Nitrophenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2,4-Dimethylphenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
bis(2-Chloroethoxy)Methane	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2,4-Dichlorophenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
1,2,4-Trichlorobenzene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Naphthalene	390 U	110 J	23 J	54 J	71 J	89 J	45 J
4-Chloroaniline	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Hexachlorobutadiene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
4-Chloro-3-Methylphenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2-Methylnaphthalene	390 U	86 J	430 U	50 J	44 J	60 J	32 J
Hexachlorocyclopentadiene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2,4,6-Trichlorophenol	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2,4,5-Trichlorophenol	950 U	1600 U	1100 U	1200 U	1500 U	1200 U	1000 U
2-Chloronaphthalene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
2-Nitroaniline	950 U	1600 U	1100 U	1200 U	1500 U	1200 U	1000 U
Dimethyl Phthalate	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Acenaphthylene	390 U	86 J	430 U	36 J	56 J	49 J	32 J
2,6-Dinitrotoluene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
3-Nitroaniline	950 U	1600 U	1100 U	1200 U	1500 U	1200 U	1000 U
Acenaphthene	390 U	440 J	56 J	84 J	350 J	290 J	170 J
2,4-Dinitrophenol	950 U	1600 U	1100 U	1200 U	1500 U	1200 U	1000 U
4-Nitrophenol	950 UJ	1600 UJ	1100 UJ	1200 UJ	1500 UJ	1200 UJ	1000 UJ
Dibenzofuran	390 U	280 J	40 J	60 J	210 J	170 J	110 J
2,4-Dinitrotoluene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Diethylphthalate	390 U	650 U	430 U	520 U	600 U	500 U	430 U
4-Chlorophenyl-phenylether	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Fluorene	390 U	510 J	67 J	100 J	430 J	340 J	220 J
4-Nitroaniline	950 UJ	1600 UJ	1100 UJ	1200 UJ	1500 UJ	1200 UJ	1000 UJ
4,6-Dinitro-2-Methylphenol	950 U	1600 U	1100 U	1200 U	1500 U	1200 U	1000 U
n-Nitrosodiphenylamine	390 U	650 U	430 U	44 J	600 U	500 U	430 U
4-Bromophenyl-phenylether	390 U	650 U	430 U	520 U	600 U	500 U	430 U

Semi-volatile Organic Analysis for Sediment Samples
DeBoer Landfill

Semi-Volatile Compound	Sample Location and Number / Concentrations in ug/kg						
	ST07	ST08	ST09	ST10	ST11	ST12	ST13
Hexachlorobenzene	390 U	650 U	430 U	520 U	600 U	500 U	430 U
Pentachlorophenol	950 U	1600 U	1100 U	1200 U	1500 U	1200 U	1000 U
Phenanthrene	200 J	9500 D	1000	800	7100 D	4900 D	3000
Anthracene	39 J	980	140 J	220 J	710	600	420 J
Carbazole	31 J	1300	190 J	140 J	860	670	450
di-n-Butylphthalate	390 U	650 UJB	430 U	520 U	600 UJB	500 UJB	430 U
Fluoranthene	450	16000 D	2200	1500	12000 D	1100	5200 D
Pyrene	320 J	1500	2000	1400	8700 D	6100 D	4700 D
Butylbenzylphthalate	29 J	1200	160 J	160 J	640	570	360 J
3,3'-Dichlorobenzidine	390 UJ	650 UJ	430 UJ	520 UJ	600 UJ	500 UJ	430 UJ
Benzo(a)Anthracene	180 J	5100 D	920	790	4500	3400	2300
Chrysene	250 J	8100 D	1400	970	5800 D	4100 D	3200
bis(2-Ethylhexyl)Phthalate	390 UJB	4100 B	1300 B	1300 B	3700 BD	2100 B	6100 BD
di-n-Octyl Phthalate	390 U	600 J	430 U	100 J	280 J	190 J	430 U
Benzo(b)Fluoranthene	320 J	11000 D	1900	1400	7400 D	5500 D	3800 D
Benzo(k)Fluoranthene	390 U	5300 U	430 U	520 U	600 U	500 U	430 U
Benzo(a)Pyrene	170 J	650 D	870	690	3600	3100	1900
Indeno(1,2,3-cd)Pyrene	150 J	2400	440	300 J	1700	1500	940
Dibenzo(a,h)Anthracene	43 J	820	210 J	160 J	590 J	570	340 J
Benzo(g,h,i)Perylene	120 J	1900	400 J	280 J	1200	1100	800
Total Number of TICs	20	20	20	20	20	20	20

sed-sv

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Sample ST01			
Unknown	4.97	610	UJB
Unknown Polynuclear Aromatic	23.65	180	J
Unknown	23.85	390	J
Unknown	24.58	380	J
Unknown Organic Acid	24.77	190	J
Unknown Alkane	25.13	180	J
Benzo[B]Naptho[2,3-D]Furan	26.77	200	JN
Unknown	27.42	350	J
Unknown Polynuclear Aromatic	27.58	280	J
Benzo[B]Naptho Thiopene IS	29.07	250	J
Unknown Polynuclear Aromatic	29.17	290	J
Unknown Alkane	29.40	200	J
Unknown Polynuclear Aromatic	30.03	270	J
Unknown Alkane	30.27	210	J
Unknown	31.12	240	J
Unknown	31.18	160	J
Unknown Polynuclear Aromatic	32.63	610	J
Unknown Polynuclear Aromatic	32.98	1400	J
Unknown Alkane	33.38	540	J
Unknown	34.45	610	J
Sample ST02			
Unknown	4.82	690	JB
Unknown	5.97	170	J
Unknown Organic Acid	24.55	740	J
Unknown	26.58	320	J
Unknown	30.62	180	J
Unknown Alkane	31.67	320	J
Unknown	31.97	140	J
Unknown	32.22	200	J
Unknown Alkane	33.17	1200	J
Unknown	33.43	190	J
Unknown	34.22	130	J
Unknown	34.38	160	J
Unknown Alkane	34.55	390	J
Unknown	34.90	270	J
Unknown	35.50	260	J
Unknown	35.65	150	J
Unknown	35.87	210	J
Unknown	36.03	170	J
Unknown	36.17	990	J
Unknown	36.37	430	J
Sample ST04			
Unknown	4.85	1100	UJB
Unknown Alkane	20.93	620	J
Unknown Alkane	21.02	590	J

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown	24.30	720	J
Unknown Organic Acid	24.57	1000	J
Sulfur	24.97	600	JN
Unknown	30.12	480	J
Unknown Alkane	31.65	510	J
Unknown	31.78	530	J
Unknown	32.22	630	J
Unknown Alkane	33.15	650	J
Unknown	33.30	560	J
Unknown Alkane	34.53	650	J
Unknown	34.78	850	J
Unknown	35.50	660	J
Unknown	35.63	490	J
Unknown	35.75	590	J
Unknown	36.10	3000	J
Unknown	36.20	1200	J
Unknown	36.35	1600	J
Sample ST05			
Unknown	4.87	710	UJB
Unknown	5.82	280	J
Unknown Alkane	20.98	470	J
Unknown Alkane	21.05	360	J
Unknown Organic Acid	24.63	620	J
Sulfur	25.02	930	JN
Unknown	26.65	230	J
Unknown Alkane	31.72	310	J
Unknown	31.80	310	J
Unknown	31.90	420	J
Unknown	32.03	740	J
Unknown Polynuclear Aromatic	32.77	250	J
Unknown Alkane	33.20	630	J
Unknown	33.30	640	J
Unknown Alkane	34.60	380	J
Unknown	34.73	280	J
Unknown	34.82	330	J
Unknown	36.15	650	J
Unknown	36.25	260	J
Unknown	36.40	370	J
Sample ST06			
Unknown	4.95	790	UJB
Unknown Alkane	21.18	590	J
Unknown Alkane	22.62	420	J
Unknown	24.72	430	J
Sulfur	25.15	1700	JN
Unknown Alkane	30.23	390	J
Unknown	31.45	470	J

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown Alkane	31.88	790	J
Unknown Alkane	32.18	470	J
Unknown	32.75	520	J
Unknown	32.83	380	J
Unknown Polynuclear Aromatic	33.05	660	J
Unknown	33.48	570	J
Unknown	33.98	380	J
Unknown	34.12	510	J
Unknown	34.45	870	J
Unknown Alkane	34.73	440	J
Unknown	35.03	730	J
Unknown	36.22	1100	J
Unknown	36.53	340	J
Sample ST07			
Unknown	4.90	670	UJB
Unknown Alkane	6.08	190	J
Unknown	12.45	150	J
Unknown Alkane	17.97	170	J
Unknown	20.22	440	J
2[3h]Benzothiazolone	20.68	300	JN
Unknown Alkane	21.07	170	J
Unknown Alkane	21.15	300	J
Unknown Alkane	22.60	140	J
Unknown Organic Acid	24.63	160	J
2-Butoxyphosphate Ethanol	29.47	220	JN
Unknown Polynuclear Aromatic	32.82	180	J
Unknown Alkane	33.30	170	J
Unknown	34.47	160	J
Unknown Alkane	34.68	160	J
Unknown	34.88	290	J
Unknown	35.13	310	J
Unknown	35.77	180	J
Unknown	36.22	180	J
Unknown	36.40	220	J
Sample ST08			
Unknown Polynuclear Aromatic	23.82	1600	J
Unknown Organic Acid	24.95	3400	J
Unknown Polynuclear Aromatic	27.60	1600	J
Unknown Polynuclear Aromatic	29.20	3400	J
Unknown	29.32	1700	J
Unknown	29.42	1600	J
Unknown Polynuclear Aromatic	30.07	2000	J
Unknown	30.28	2300	J
Unknown Organic Acid	30.93	2700	J
Unknown	31.52	2100	J
Unknown	31.72	1600	J

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown Alkane	31.93	5100	J
Unknown Polynuclear Aromatic	32.68	2200	J
Unknown	32.80	1700	J
Unknown	32.93	1800	J
Unknown Polynuclear Aromatic	33.02	3300	J
Unknown Alkane	33.38	4000	J
Unknown	34.45	1900	J
Unknown	34.92	2700	J
Unknown	36.22	1900	J
Sample ST09			
Unknown	4.98	740	UJB
Unknown Polynuclear Aromatic	23.82	230	J
Unknown	24.47	200	J
Unknown	24.57	350	J
Unknown Organic Acid	24.75	400	J
Unknown	26.35	280	J
Unknown	26.85	310	J
Unknown Polynuclear Aromatic	27.37	200	J
Unknown	28.78	440	J
Unknown Polynuclear Aromatic	29.13	290	J
Unknown Polynuclear Aromatic	30.83	260	J
Unknown Polynuclear Aromatic	31.08	230	J
Unknown Alkane	31.87	590	J
Unknown Polynuclear Aromatic	32.42	1200	J
Unknown Polynuclear Aromatic	32.93	710	J
Unknown Alkane	33.37	960	J
Unknown	34.43	560	J
Unknown	34.92	1800	J
Unknown	35.02	550	J
Unknown	36.23	470	J
Sample ST10			
Unknown	4.92	840	UJB
Unknown Organic Acid	24.73	590	J
Sulfur	25.17	1100	JN
Unknown	27.27	340	J
Mitotone	28.03	660	JN
Unknown Polynuclear Aromatic	30.83	470	J
Unknown	31.45	970	J
Unknown Alkane	31.87	1300	J
Unknown Organic Acid	32.43	1600	J
Unknown	32.73	940	J
Unknown	32.83	640	J
Unknown Polynuclear Aromatic	33.05	1000	J
Unknown Alkane	33.35	1400	J
Unknown	33.47	850	J
Unknown	34.43	760	J

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown Alkane	34.72	590	J
Unknown	34.90	670	J
Unknown	35.00	840	J
Unknown	35.57	580	J
Unknown	36.22	1400	J
Sample ST11			
Unknown	5.03	900	UJB
Unknown Polynuclear Aromatic	23.90	370	J
Unknown Polynuclear Aromatic	27.48	530	J
Unknown Polynuclear Aromatic	27.67	370	J
Benzo(b)napthiotiophene isomer	29.15	320	J
Unknown Polynuclear Aromatic	29.27	660	J
Unknown Polynuclear Aromatic	29.38	290	J
Unknown Polynuclear Aromatic	30.12	440	J
Unknown Polynuclear Aromatic	30.97	320	J
Unknown	31.55	380	J
Unknown	31.83	1000	J
Unknown Alkane	31.98	1600	J
Unknown Polynuclear Aromatic	32.73	1200	J
Unknown	32.95	1000	J
Unknown Polynuclear Aromatic	33.08	3000	J
Unknown Alkane	33.47	1700	J
Unknown	33.58	1100	J
Unknown	34.53	1400	J
Unknown	35.02	1200	J
Unknown	36.32	1000	J
Sample ST12			
Unknown	5.07	890	UJB
Unknown Polynuclear Aromatic	23.92	420	J
Unknown Organic Acid	24.78	440	J
Unknown Organic Acid	25.07	1300	J
Unknown Polynuclear Aromatic	25.83	3000	J
Unknown	26.50	470	J
Unknown Cyclic Acid	27.05	430	J
Octadecanoic Acid	27.30	590	JN
Unknown Polynuclear Aromatic	27.50	380	J
Unknown Polynuclear Aromatic	29.27	430	J
Unknown Polynuclear Aromatic	30.13	300	J
Unknown Alkane	31.98	1800	J
Unknown Polynuclear Aromatic	32.73	1000	J
Unknown Polynuclear Aromatic	33.08	2100	J
Unknown Alkane	33.47	2600	J
Unknown	34.53	1400	J
Unknown	34.75	1100	J
Unknown Alkane	34.83	1200	J
Unknown	35.02	2880	J

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown	36.32	950	J
Sample ST13			
Unknown	5.02	760	UJB
Unknown Polynuclear Aromatic	23.88	370	J
Unknown	24.55	230	J
Unknown	24.63	530	J
Unknown Organic Acid	24.85	420	J
Unknown	26.45	420	J
Unknown	26.87	200	J
Unknown Polynuclear Aromatic	27.45	400	J
Unknown Polynuclear Aromatic	27.63	270	J
Benzo(b)naphtho thiopene isomer	29.10	210	J
Unknown Polynuclear Aromatic	29.22	390	J
Unknown Polynuclear Aromatic	30.07	270	J
Unknown	30.28	210	J
Unknown Alkane	31.93	990	J
Unknown Polynuclear Aromatic	32.68	700	J
Unknown Polynuclear Aromatic	33.02	1500	J
Unknown Alkane	33.42	1700	J
Unknown	34.48	650	J
Unknown Alkane	34.78	950	J
Unknown	34.98	660	J

sedsvtic

Pesticide/Pcb Analysis for Sediment Samples DeBoer Landfill												
	Sample Location and Number / Concentrations in ug/kg											
Pesticide/ PCB	ST01 Background	ST02	ST04	ST05	ST06	ST07	ST08	ST09	ST10	ST11	ST12	STI3
Alpha-BHC	2.0 UJ	2.4 UJ	3.6 UJ	2.4 UJ	2.7 UJ	2.0 UJ	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	2.2 UJ
Beta-BHC	2.0 UJ	2.4 UJ	3.6 UJ	2.4 UJ	2.7 UJ	2.0 UJ	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	3.9 JP
Delta-BHC	2.0 UJ	2.4 UJ	3.6 UJ	2.4 UJ	2.7 UJ	2.0 UJ	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	2.2 UJ
Gamma-BHC (Lind.)	2.0 UJ	2.4 UJ	3.6 UJ	7.4 JP	2.7 UJ	3.1 JP	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	2.2 UJ
Heptachlor	2.0 UJ	2.4 UJ	3.6 UJ	2.4 UJ	2.7 UJ	2.0 UJ	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	2.2 UJ
Aldrin	2.0 UJ	2.4 UJ	3.6 UJ	0.98 JP	2.7 UJ	2.0 UJ	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	2.2 UJ
Heptachlor Epoxide	2.0 UJ	2.4 UJ	3.6 UJ	2.4 UJ	2.7 UJ	2.0 UJ	2.8 J	1.4 J	2.7 UJ	3.2 J	2.7 J	1.6 J
Endosulfan I	2.0 UJ	2.4 UJ	3.6 UJ	2.4 UJ	2.7 UJ	2.0 UJ	3.3 UJ	2.2 UJ	2.7 UJ	3.1 UJ	2.6 UJ	2.2 UJ
Dieldrin	3.8 UJ	1.2 JP	7.0 UJ	4.6 UJ	5.2 UJ	3.9 UJ	6.5 UJ	4.3 UJ	10 JP	6.0 UJ	5.0 UJ	4.3 UJ
4,4'-DDE	3.8 UJ	44 J	53 J	12 J	20 J	8.3 J	7.0 JP	3.7 J	29 J	6.7 JP	9.1 J	5.9 J
Endrin	3.8 UJ	4.6 UJ	7.0 UJ	4.6 UJ	5.2 UJ	3.9 UJ	6.5 UJ	4.3 UJ	5.2 UJ	6.0 UJ	5.0 UJ	4.3 UJ
Endosulfan II	3.8 UJ	4.6 UJ	7.0 UJ	4.6 UJ	5.2 UJ	3.9 UJ	6.5 UJ	4.3 UJ	5.2 UJ	6.0 UJ	5.0 UJ	4.3 UJ
4,4'-DDD	3.8 UJ	8.6 JP	74 J	13 JP	240 DJ	13 JP	29 JP	14 JP	1100 JPD	25 JP	25 JP	18 JP
Endosulfan Sulfate	3.8 UJ	4.6 UJ	7.0 UJ	2.3 JP	5.2 UJ	3.9 UJ	6.5 UJ	4.3 UJ	5.2 UJ	6.0 UJ	9.6 JP	9.4 J
4,4'-DDT	3.8 UJ	39 J	17 J	21 J	10 JP	22 J	9.9 JP	6.1 JP	80 J	7.9 JP	27 J	21 J
Methoxychlor	20 UJ	24 UJ	36 UJ	24 UJ	27 UJ	20 UJ	33 UJ	22 UJ	27 UJ	31 UJ	26 UJ	22 UJ
Endrin Ketone	2.6 J	4.6 UJ	7.0 UJ	4.6 UJ	5.2 UJ	3.9 UJ	8.5 J	4.3 UJ	5.2 UJ	5.7 UJP	5.0 JP	3.4 J
Endrin Aldehyde	3.8 J	1.7 J	7.0 UJ	4.6 UJ	2.7 JP	3.9 UJ	6.5 UJ	4.3 UJ	5.2 UJ	6.0 UJ	5.0 UJ	4.3 UJ
Alpha-Chlordane	2.0 UJ	2.4 UJ	2.1 J	3.4 J	8.6 J	1.3 J	6.9 JP	3.4 J	13 J	6.3 J	6.4 J	3.7 J
Gamma-Chlordane	2.0 UJ	2.4 UJ	3.6 UJ	2.6 J	7.0 J	0.95 J	5.5 J	2.3 J	11 J	5.0 J	5.7 J	3.2 J
Toxaphene	200 UJ	240 UJ	360 UJ	240 UJ	270 UJ	200 UJ	330 UJ	220 UJ	270 UJ	310 UJ	260 UJ	220 UJ
Aroclor-1016	38 UJ	46 UJ	70 UJ	46 UJ	52 UJ	39 UJ	65 UJ	43 UJ	52 UJ	60 UJ	50 UJ	43 UJ
Aroclor-1221	78 UJ	94 UJ	140 UJ	93 UJ	100 UJ	80 UJ	130 UJ	88 UJ	100 UJ	120 UJ	100 UJ	87 UJ
Aroclor-1232	38 UJ	46 UJ	70 UJ	46 UJ	52 UJ	39 UJ	65 UJ	43 UJ	52 UJ	60 UJ	50 UJ	43 UJ
Aroclor-1242	38 UJ	46 UJ	70 UJ	46 UJ	52 UJ	39 UJ	65 UJ	43 UJ	52 UJ	60 UJ	50 UJ	43 UJ
Aroclor-1248	38 UJ	46 UJ	70 UJ	46 UJ	52 UJ	39 UJ	65 UJ	43 UJ	52 UJ	60 UJ	50 UJ	43 UJ
Aroclor-1254	38 UJ	46 UJ	70 UJ	46 UJ	110 JP	39 UJ	89 J	66 JP	180 PJ	79 J	68 J	50 JP
Aroclor-1260	38 UJ	46 UJ	70 UJ	46 UJ	52 UJ	39 UJ	65 UJ	43 UJ	52 UJ	60 UJ	50 UJ	43 UJ

sedpest

Inorganic Analysis for Sediment Samples
DeBoer Landfill

Metals and Cyanide	Sample Location and Number Concentrations in mg/kg											
	ST01 Background	ST02	ST04	ST05	ST06	ST07	ST08	ST09	ST10	ST11	ST12	ST13
Aluminum	3210 J	9770 J	7730 J	10900 J	8970 J	4250 J	7010 J	12200 J	9460 J	6630 J	6550 J	6240 J
Antimony	16.4 JN	13.9 JBN	24.2 JN	15.8 JBN	14.2 JBN	11.3 JBN	13.4 JBN	18.3 JBN	15.8 JBN	13.8 JBN	18.7 JBN	16.5 JBN
Arsenic	4.3	5.9	13.6	10.4	12.2	6.3	8.0	14.3	15.6	6.9	7.9	8.1
Barium	41.5 B	38.0 B	37.9 B	46.0 B	56.1	17.3 B	70.0 B	79.0	54.1 B	74.2	82.2	60.2 B
Beryllium	0.28 B	0.40 B	0.38 U	0.57 B	0.59 B	0.24 U	0.42 U	0.66 B	0.41 B	0.50 B	0.37 U	0.35 B
Cadmium	0.47 UJN	0.56 UJN	0.76 UJN	0.63 UJN	0.90 JBN	0.48 UJN	1.4 JBN	0.62 UJN	0.96 JBN	1.8 JN	1.6 JBN	0.63 JBN
Calcium	110000	36800	48800	63100	45800	111000	47400	44100	51500	58800	50800	63900
Chromium	16.4 J	15.4 J	14.5 J	18.7 J	25.8 J	8.3 J	30.8 J	25.5 J	23.0 J	30.7 J	26.0 J	24.7 J
Cobalt	2.9 B	6.9 B	11.4 B	9.2 B	8.5 B	5.0 B	6.5 B	11.4 B	7.5 B	7.4 B	7.4 B	7.5 B
Copper	23.0 J	22.6 J	69.3 J	29.9 J	42.0 J	11.1 J	62.9 J	43.7 J	55.5 J	72.9 J	61.6 J	47.2 J
Iron	20700 JE	14500 JE	24200 JE	19800 JE	17000 JE	11400 JE	17000 JE	22700 JE	17000 JE	15400 JE	16200 JE	15300 JE
Lead	101 JN	17.9 JN	48.4 JN	54.7 JN	313 JN	6.9 JN	153 JN	76.4 JN	385 JN	184 JN	226 JN	163 JN
Magnesium	65200	20000	30500	36900	24600	62800	24300	25200	25100	31400	29000	36500
Manganese	371 JEN	281 JEN	358 JEN	357 JEN	261 JEN	336 JEN	287 JEN	655 JEN	252 JEN	293 JEN	346 JEN	435 JEN
Mercury	0.12 U	0.14 U	0.19 U	0.16 U	0.19	0.12 U	0.23	0.16	0.33	0.20	0.26	0.24
Nickel	6.8 B	18.2	26.9	21.5	24.0	10.7	18.6	25.9	26.4	19.9	19.3	17.5
Potassium	738 B	1860	2140	3270	2050	1680	1520 B	2400	1880	1340 B	1220 B	1100 B
Selenium	0.95 U	1.1 U	1.5 U	1.3 U	1.1 U	0.96 U	1.7 U	1.2 U	1.6 JB	1.8 J	1.5 U	1.3 U
Silver	0.71 U	0.84 U	1.1 U	0.94 U	0.80 U	0.72 U	1.2 U	0.93 U	1.8 B	0.97 U	1.1 U	0.95 U
Sodium	440 JB	263 JB	389 JB	399 JB	318 JB	327 JB	669 B	342 JB	424 JB	359 JB	350 JB	320 JB
Thallium	1.7 U	2.0 U	2.7 U	2.2 U	1.9 U	1.7 U	2.9 U	2.2 U	2.4 U	2.3 U	2.6 U	2.2 U
Vanadium	12.0	23.8	19.7	26.1	21.8	12.3	20.8 B	32.5	24.6	19.0	18.8	18.5
Zinc	155 JEN	51.9 JEN	103 JEN	124 JEN	228 JEN	20.9 JEN	328 JEN	152 JEN	282 JEN	367 JEN	296 JEN	216 JEN
Cyanide	0.59 U	0.70 U	0.95 U	0.78 U	0.67 U	0.60 U	1.2	0.78 U	0.85 U	0.95	1.3	0.88

sedmetal

sedmetal

Volatile Organic Analysis for Soil Samples DeBoer Landfill									
Volatile Compound	Sample Locations and Number / Concentration in ug/kg								
	SS01	SS07	SS02	SS03	SS04	SS05	SS06	SS08	SS09
	Background								
Chloromethane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Bromomethane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Vinyl Chloride	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Chloroethane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Methylene Chloride	12 UJ	17 UJB	11 UJ	13 UJ	13 UJ	18 RUJB	13 UJB	17 UJB	12 UJ
Acetone	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Carbon Disulfide	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
1,1-Dichloroethene	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
1,1-Dichloroethane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
1,2-Dichloroethene (total)	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Chloroform	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
1,2-Dichloroethane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
2-Butanone	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
1,1,1-Trichloroethane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
Carbon Tetrachloride	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
Bromodichloromethane	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
1,2-Dichloropropane	12 UJ	14 UJ	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 UJ	12 UJ
cis-1,3-Dichloropropene	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
Trichloroethene	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
Dibromochloromethane	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
1,1,2-Trichloroethane	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
Benzene	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
trans-1,3-Dichloropropene	12 UJ	14 U	11 UJ	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
Bromoform	12 UJ	14 U	11 U	13 UJ	13 UJ	12 RUJ	13 UJ	14 U	12 U
4-Methyl-2-Pentanone	12 RUJ	14 RU	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RU	12 RU
2-Hexanone	12 RUJ	14 RUJ	11 UJ	13 UJR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Tetrachloroethene	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
1,1,2,2-Tetrachloroethane	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Toluene	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Chlorobenzene	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Ethylbenzene	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Styrene	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Xylene (total)	12 RUJ	14 RUJ	11 UJ	13 UR	13 UJ	12 RUJ	13 UJ	14 RUJ	12 RUJ
Total Number of TICS *	2	3	4	4	3	3	2	4	1

* Number, not concentrations, of tentatively identified compounds (TICs).

soilvol

Note: There are no volatile organics analysis for sample SS10. The data was returned to the lab because the holding time was exceeded by 49 days.

Volatile Organic Analysis for Soil Samples
Tentatively Identified Compounds

Concentrations in ug/kg

Compound Name	Retention Time	Estimated Concentration
Sample SS01		
Carbon Dioxide/Argon	0.57	10 UJB
Unknown	2.53	12 J
Sample SS02		
Carbon Dioxide/Argon	0.53	8 UJB
Unknown	2.48	4 J
Unknown CFC	3.58	4 J
Hexane	6.12	4 UJBN
Sample SS03		
Carbon Dioxide/Argon	0.53	12 UJB
Unknown	2.48	12 J
Unknown CFC	3.58	7 J
Hexane	6.12	5 UJBN
Sample SS04		
Carbon Dioxide/Argon	0.53	10 UJB
Unknown	2.50	6 J
Hexane	6.15	5 UJBN
Sample SS05		
Carbon Dioxide/Argon	1.10	44 JB
Unknown	2.98	38 JB
Hexane	4.15	9 UJ
Sample SS06		
Carbon Dioxide/Argon	0.48	12 UJB
Unknown CFC	3.17	15 J
Sample SS07		
Carbon Dioxide/Argon	0.48	12 UJB
Unknown	2.28	9 J
Hexane	3.13	13 J
Sample SS08		
Carbon Dioxide/Argon	0.48	15 UJB
Unknown	2.28	7 J
Unknown CFC	3.13	12 J
Hexane	5.47	6 UJBN
Sample SS09		
Carbon Dioxide/Argon	0.48	11 UJB

soilvtic

Semi-volatile Organic Analysis for Soil Samples
DeBoer Landfill

Semi-Volatile Compound	Sample Location / Concentrations in ug/kg									
	SS01	SS07	SS02	SS03	SS04	SS05	SS06	SS08	SS09	SS10
	Background									
Phenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
bis(2-Chloroethyl)Ether	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2-Chlorophenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
1,3-Dichlorobenzene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
1,4-Dichlorobenzene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
1,2-Dichlorobenzene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2-Methylphenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2,2'-oxybis(1-Chloropropane)	400 U	430 UJ	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 UJ	400 UJ	410 U
4-Methylphenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
n-Nitroso-Di-n-Propylamine	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Hexachloroethane	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Nitrobenzene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Isophorone	400 U	430 U	370 U	420 U	420 U	400 U	420 UJ	460 U	400 UJ	410 U
2-Nitrophenol	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
2,4-Dimethylphenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
bis(2-Chloroethoxy)Methane	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
2,4-Dichlorophenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
1,2,4-Trichlorobenzene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Naphthalene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
4-Chloroaniline	400 UJ	430 UJ	370 U	420 U	420 U	400 U	420 UJ	460 UJ	400 UJ	410 UJ
Hexachlorobutadiene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
4-Chloro-3-Methylphenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2-Methylnaphthalene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Hexachlorocyclopentadiene	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
2,4,6-Trichlorophenol	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2,4,5-Trichlorophenol	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U
2-Chloronaphthalene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2-Nitroaniline	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U
Dimethyl Phthalate	400 U	430 UJ	370 UJ	420 UJ	420 UJ	400 UJ	420 UJ	460 UJ	400 UJ	410 U
Acenaphthylene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2,6-Dinitrotoluene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
3-Nitroaniline	970 UJ	1100 UJ	890 UJ	1000 UJ	1000 UJ	960 UJ	1000 UJ	1100 UJ	960 UJ	1000 UJ
Acenaphthene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2,4-Dinitrophenol	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U

Semi-volatile Organic Analysis for Soil Samples
DeBoer Landfill

Semi-Volatile Compound	Sample Location / Concentrations in ug/kg									
	SS01	SS07	SS02	SS03	SS04	SS05	SS06	SS08	SS09	SS10
	Background									
4-Nitrophenol	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U
Dibenzofuran	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
2,4-Dinitrotoluene	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
Diethylphthalate	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
4-Chlorophenyl-phenylether	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Fluorene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
4-Nitroaniline	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U
4,6-Dinitro-2-Methylphenol	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U
n-Nitrosodiphenylamine	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
4-Bromophenyl-phenylether	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
Hexachlorobenzene	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
Pentachlorophenol	970 U	1100 U	890 U	1000 U	1000 U	960 U	1000 U	1100 U	960 UJ	1000 U
Phenanthrene	450	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	620 J	590 J	410 U
Anthracene	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Carbazole	400 UJ	430 UJ	370 UJ	420 UJ	420 UJ	400 UJ	420 UJ	460 UJ	400 UJ	410 UJ
di-n-Butylphthalate	400 U	430 U	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 U
Fluoranthene	810	640 J	370 UJ	420 UJ	420 UJ	400 UJ	990 J	1300 J	1600 J	480
Pyrene	710 J	660 J	370 U	420 U	420 U	400 U	930 J	1300 J	1800 J	440
Butylbenzylphthalate	400 U	430 UJ	370 U	420 U	420 U	400 U	420 U	1100 J	400 UJ	410 U
3,3'-Dichlorobenzidine	400 UJ	430 UJ	370 UJ	420 UJ	420 UJ	400 UJ	420 U	460 U	400 UJ	410 UJ
Benzo(a)Anthracene	400 U	430 U	370 U	420 U	420 U	400 U	530 J	640 J	680 J	410 U
Chrysene	400 U	430 UJ	370 U	420 U	420 U	400 U	820 J	670 J	750 J	410 U
bis(2-Ethylhexyl)Phthalate	400 U	440 J	370 U	420 U	420 U	400 U	420 UJ	460 UJ	670 J	660
di-n-Octyl Phthalate	400 UJ	430 UJ	370 UJ	420 UJ	420 UJ	400 UJ	420 UJ	460 UJ	400 UJ	410 UJ
Benzo(b)Fluoranthene	400 U	430 UJ	370 U	420 U	420 U	400 U	810 J	1000 J	980 J	410 U
Benzo(k)Fluoranthene	450	430 U	370 U	420 U	420 U	400 U	610 J	1000 J	590 J	410 U
Benzo(a)Pyrene	400 U	430 UJ	370 UJ	420 UJ	420 UJ	400 UJ	590 J	720 J	750 J	410 U
Indeno(1,2,3-cd)Pyrene	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	490 J	410 U
Dibenzo(a,h)Anthracene	400 U	430 U	370 U	420 U	420 U	400 U	420 U	460 U	400 UJ	410 U
Benzo(g,h,i)Perylene	400 U	430 U	370 U	420 U	420 U	400 U	420 U	490 U	570 UJ	410 U
Total Number of TICs	19	20	16	20	20	20	19	17	18	20

soil-sv

Semi-volatile Organic Analysis for Soil Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Sample SS01			
Aldol Condensation Product	9.35	26000	JA
Unknown	11.08	2200	J
Unknown	12.83	1800	JB
Unknown	14.17	2400	JB
Unknown	31.68	640	J
Unknown HC	33.63	1300	JB
Unknown HC	34.55	860	JB
Unknown HC	35.45	3300	JB
Unknown	35.63	400	J
Unknown	36.33	1000	BJ
Unknown	36.58	200	J
Unknown	36.80	1900	J
Unknown HC	37.35	13000	J
Unknown	37.62	1100	J
Unknown	38.45	980	JB
Unknown	39.08	1800	J
Unknown HC	39.77	8200	J
Unknown	42.18	1300	J
Unknown	43.05	1500	J
Sample SS02			
Aldol Condensation Product	9.33	17000	JA
Unknown	11.07	1300	J
Unknown	11.78	360	J
Unknown	14.17	1800	J
Unknown	32.65	440	JB
Unknown	33.62	680	JB
Unknown	34.53	710	JB
Unknown	35.42	940	JB
Unknown	35.88	39	J
Unknown	36.33	620	JB
Unknown	36.77	310	J
Unknown	37.32	2000	J
Unknown	38.02	92	J
Unknown	38.45	420	JB
Unknown	39.73	1100	J
Unknown	44.02	200	J
Sample SS03			
Aldol Condensation Product	9.28	17000	JA
Unknown	11.07	1400	J
Unknown	14.15	1900	JB
Unknown HC	33.62	1200	JB
Unknown	33.93	740	J
Unknown	34.53	750	JB
Unknown	34.90	580	J
Unknown HC	35.43	2700	JB

Semi-volatile Organic Analysis for Soil Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown	35.62	280	J
Unknown	35.82	900	J
Unknown	36.33	1000	BJ
Unknown	36.78	9800	J
Unknown HC	37.33	14000	J
Unknown	37.60	600	J
Unknown	37.77	2900	J
Unknown	38.45	960	JB
Unknown	39.07	1700	J
Unknown HC	39.75	7300	J
Unknown	42.13	810	J
Unknown	43.02	1700	J
Sample SS04			
Aldol Condensation Product	9.28	17000	JA
Unknown	11.07	1200	J
Unknown Ketone	12.82	1000	JB
Unknown	14.15	1700	J
Unknown HC	35.42	1400	JB
Unknown	35.62	690	J
Unknown	36.33	570	JB
Unknown	36.77	1200	J
Unknown HC	37.32	9000	J
Unknown	37.60	340	J
Unknown	37.75	890	J
Unknown	37.87	370	J
Unknown	38.43	740	JB
Unknown	39.43	2200	J
Unknown HC	39.75	7100	J
Unknown	40.53	500	j
Unknown HC	43.02	2900	J
Unknown	44.08	3800	J
Unknown	44.60	900	J
Unknown	45.73	770	J
Sample SS05			
Aldol Condensation Product	9.32	20000	JA
Unknown	11.07	1400	J
Unknown	12.82	1000	J
Unknown	14.17	1800	J
Unknown	33.62	840	JB
Unknown HC	34.53	690	JB
Unknown	34.90	400	J
Unknown	35.43	2500	JB
Unknown	35.82	440	J
Unknown	36.33	900	JB
Unknown	36.78	13000	J
Unknown	37.33	14000	J

Semi-volatile Organic Analysis for Soil Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown	37.75	2100	J
Unknown	38.45	680	JB
Unknown	39.07	2000	J
Unknown HC	39.75	5700	J
Unknown	40.50	460	J
Unknown	42.15	1500	J
Unknown	43.02	930	J
Unknown	44.05	540	J
Sample SS06			
Aldol Condensation Product	9.05	21000	JA
Unknown	10.08	1300	J
Unknown	12.58	1600	BJ
Unknown	13.90	1300	BJ
Unknown	33.33	480	UJB
Unknown	34.25	400	J
Unknown	35.15	710	JB
Unknown	35.33	64	J
Unknown	35.72	140	J
Unknown	36.02	350	UJB
Unknown	36.23	55	J
Unknown	36.45	1800	J
Unknown	37.60	560	J
Unknown PAH	37.88	550	JB
Unknown	38.63	370	J
Unknown HC	39.27	2200	J
Unknown	42.40	1200	J
Unknown	43.33	470	J
Unknown	43.87	1400	J
Sample SS07			
Aldol Condensation Product	9.13	29000	JA
Unknown	10.83	2000	J
Unknown	12.58	2300	BJ
Unknown	13.93	1600	BJ
Unknown HC	33.33	1100	J
Unknown	34.25	420	J
Unknown	34.63	250	J
Unknown HC	35.15	2600	BJ
Unknown	35.53	170	J
Unknown	35.58	330	J
Unknown	36.02	550	UJB
Unknown	36.45	11000	JB
Unknown	37.40	3300	J
Unknown	38.30	450	UJB
Unknown	38.63	1800	J
Unknown	39.27	3400	J
Unknown	40.13	380	J

Semi-volatile Organic Analysis for Soil Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown	40.23	120	J
Unknown	41.55	600	J
Unknown	43.33	510	J
Sample SS08			
Aldol Condensation Product	9.17	30000	JA
Unknown	10.83	2300	J
Unknown	24.73	1900	J
Unknown	31.40	510	J
Unknown	32.40	340	BJ
Unknown	33.33	830	UJB
Unknown	33.75	140	J
Unknown	34.27	340	UJB
Unknown	35.17	1100	JB
Unknown	35.63	100	J
Unknown	36.03	370	UJB
Unknown	36.25	160	J
Unknown	36.47	3400	J
Unknown	37.48	1800	J
Unknown PAH	37.90	740	JB
Unknown	38.65	570	J
Unknown	39.30	4300	J
Sample SS09			
Aldol Condensation Product	9.95	34000	JA
Unknown	31.18	980	J
Unknown	32.23	1200	J
Unknown	33.22	1000	JB
Unknown	33.58	110	J
Unknown	33.77	600	J
Unknown	34.18	1400	JB
Unknown	34.32	64	J
Unknown	34.58	200	J
Unknown HC	35.10	1200	JB
Unknown	35.25	240	J
Unknown	35.48	110	J
Unknown	35.67	150	J
Unknown	36.02	1700	J
Unknown	36.08	230	J
Unknown	36.98	710	J
Unknown HC	38.07	9200	JB
Unknown HC	40.73	5900	J
Sample SS10			
Aldol Condensation Product	9.37	25000	JA
Unknown	32.15	110	J
Unknown	32.47	140	J
Unknown	32.73	590	JB
Unknown	32.93	270	J

Semi-volatile Organic Analysis for Soil Samples Tentatively Identified Compounds DeBoer Landfill Concentrations in ug/kg			
Compound Name	Retention Time	Estimated Concentration	
Unknown	33.03	190	J
Unknown	33.30	190	J
Unknown	33.65	960	JB
Unknown	33.82	110	J
Unknown	34.57	430	JB
Unknown	34.90	180	J
Unknown	35.13	660	J
Unknown	35.45	790	JB
Unknown	35.75	330	J
Unknown	35.85	320	J
Unknown	36.07	330	J
Unknown	36.37	480	JB
Unknown	36.63	91	J
Unknown	36.80	830	JB
Unknown	37.35	1600	J

soilsvtic

Pesticide/Pcb Analysis for Soil Samples DeBoer Landfill										
Pesticide/ PCB	Sample Location and Number / Concentrations in ug/kg									
	SS01	SS07	SS02	SS03	SS04	SS05	SS06	SS08	SS09	SS10
	Background									
Alpha-BHC	2.1 U	2.2 U	1.9 U	2.2 U	2.1 U	2.0 U	2.2 U	0.25 JP	2.0 U	2.1 U
Beta-BHC	2.1 U	2.2 U	1.9 U	2.2 U	2.1 U	2.0 U	2.2 U	2.4 U	2.0 U	2.1 U
Delta-BHC	3.7 P	2.2 U	1.9 U	0.52 JP	2.1 U	0.34 JP	1.3 JP	4.4 JP	1.4 JP	2.1 U
Gamma-BHC (Lind.)	2.1 U	2.2 U	1.9 U	2.2 U	2.1 U	2.0 U	2.2 U	2.4 U	2.0 U	2.1 U
Heptachlor	2.1 U	2.2 U	0.24 J	2.2 U	2.1 U	2.0 U	2.2 U	2.4 U	2.0 U	2.1 U
Aldrin	0.6 J	2.2 U	1.9 U	2.2 U	2.1 U	2.0 U	2.2 U	3.8 J	3.6	0.40 JP
Heptachlor Epoxide	0.7 J	2.2 U	1.4 J	2.2 U	2.1 U	0.40 J	0.56 J	5.2 J	2.0 U	0.67 J
Endosulfan I	2.1 U	2.2 U	1.9 U	2.2 U	2.1 U	2.0 U	2.2 U	2.4 U	2.0 U	2.1 U
Dieldrin	2.4 JP	0.98 JP	4.6	1.5 JP	4.2 U	1.4 JP	1.2 JP	18 J	15	6.3 P
4,4'-DDE	49	11 P	1.3 J	220 JD	6.6	48 JD	74 JND	32 J	28	4.7
Endrin	2.0 UJP	20 P	3.7 U	1.3 JP	4.2 U	2.8 JP	5.3 P	16 UJP	4.0 U	2.7 JP
Endosulfan II	1.0 JP	0.76 JP	3.7 U	0.87 JP	4.2 U	4.0 U	1.2 JP	4.6 U	2.9 JP	4.1 U
4,4'-DDD	17 P	4.3 U	2.0 J	7.5 P	4.2 U	6.9 P	1.8 JP	4.6 U	96 JD	4.1 U
Endosulfan Sulfate	4.0 U	4.3 U	3.7 U	4.2 U	4.2 U	4.0 U	4.2 U	4.6 U	4.0 U	4.1 U
4,4'-DDT	130 DJ	14	2.4 J	110 JD	6.1	20 JD	71 JD	21 JP	13 P	9.4 P
Methoxychlor	3 JP	3.7 JP	19 U	22 U	21 U	20 U	4.4 JP	24 U	20 U	1.0 JP
Endrin Ketone	4.0 U	4.3 U	3.7 U	4.2 U	4.2 U	4.0 U	4.2 U	4.6 U	4.0 U	4.1 U
Endrin Aldehyde	4.0 U	4.3 U	3.7 U	4.2 U	4.2 U	4.0 U	4.2 U	4.6 U	4.0 U	4.1 U
Alpha-Chlordane	1.6 JP	2.2 U	0.27 JP	2.2 U	2.1 U	2.0 U	0.83 JP	70 JD	6.5 P	5.4 P
Gamma-Chlordane	1.5 JP	2.2 U	0.76 J	2.2 U	2.1 U	0.45 JP	0.78 JP	46 J	10 P	5.4
Toxaphene	210 U	220 U	190 U	220 U	210 U	200 U	220 U	240 U	200 U	210 U
Aroclor-1016	40 U	43 U	37 U	42 U	42 U	40 U	42 U	46 U	40 U	41 U
Aroclor-1221	82 U	43 U	74 U	86 U	85 U	81 U	86 U	93 U	80 U	84 U
Aroclor-1232	40 U	43 U	37 U	42 U	42 U	40 U	42 U	46 U	40 U	41 U
Aroclor-1242	40 U	43 U	37 U	42 U	42 U	40 U	42 U	46 U	40 U	41 U
Aroclor-1248	40 U	43 U	37 U	42 U	42 U	40 U	42 U	46 U	40 U	41 U
Aroclor-1254	40 U	43 U	37 U	42 U	42 U	40 U	42 U	610 JP	320	41 U
Aroclor-1260	40 U	43 U	37 U	42 U	42 U	40 U	42 U	46 U	40 U	41 U

soilpest

Inorganic Analysis for Soil Samples
DeBoer Landfill

Metals and Cyanide	Sample Locations and Number Concentrations in mg/kg									
	SS01	SS07	SS02	SS03	SS04	SS05	SS06	SS08	SS09	SS10
	Background									
Aluminum	7040 J	9750 J	4940 J	6670 J	7230 J	8680 J	6250 J	7690 J	3690 J	8020 J
Antimony	7.3 UJN	7.9 JBN	6.5 UJN	7.5 UJN	7.7 UJN	7.1 UJN	7.4 UJN	8.0 UJN	7.5 JBN	7.4 UJN
Arsenic	6.4	1.4 BW	8.5	2.8	3.5	10.1	5.9	9.9	9.5	7.5
Barium	57.9	74.7	28.6 B	50.3 B	48.9 B	78.4	54.4	137	48.1 B	203
Beryllium	0.52 B	0.67 B	0.24 B	0.43 B	0.36 B	0.49 B	0.40 B	0.56 B	0.25 U	0.44 B
Cadmium	0.69 U	1.1 B	0.62 U	0.77 B	0.73 U	0.68 U	0.71 U	11.3	1.4	2.2
Calcium	43900	22300	61300	19100	43300	24500	33600	24600	50600	49900
Chromium	14.9	17.7	10.2	13.6	12.4	14.3	12.2	134	14.1	21.0
Cobalt	9.6 B	11.5 B	9.7 B	8.4 B	7.5 B	13.5	8.2 B	11.2 B	17.3	10.0 B
Copper	25.2	27.7	22.1	32.9	20.5	23.2	21.5	113	114	52.9
Iron	17800	20000	17800	13000	16300	22000	20500	22500	19300	16900
Lead	78.6	70.3	17.1	37.7	25.8	28.9	38.8	214	108	49.3
Magnesium	24400	12500	33200	9170	23200	14500	19100	12300	29000	26000
Manganese	330	348	465	221	544	756	533	321	387	417
Mercury	0.06 U	0.07 U	0.06 U	0.06 U	0.07 U	0.06 U	0.06 U	0.62	0.10 B	0.06 U
Nickel	22.8	25.5	19.7	20.9	20.7	24.3	18.1	47.8	27.1	26.1
Potassium	1570	2220	974 U	1120 U	1150 U	1060	1110 U	1270 B	1080 U	1290
Selenium	0.34 JBNW	0.41 JBNW	0.22 UJN	0.39 JBN	0.26 UJNW	0.34 JBNW	0.25 UJN	0.53 JBNW	0.25 JBNW	0.25 UJNW
Silver	0.84 U	0.89 U	0.75 U	0.87 U	0.89 U	0.82 U	0.86 U	1.6 B	0.83 U	0.85 U
Sodium	119 B	76.6 B	113 B	77.9 B	76.2 B	99.8 B	82.4 B	109 B	188 B	740 B
Thallium	0.25 U	0.29 B	0.27 B	0.26 U	0.26 U	0.24 U	0.25 U	0.27 U	0.59 B	0.27 B
Vanadium	16.7	21.9	12.8	17	15.7	21.1	15.7	20.4	10.5 B	17.4
Zinc	110	132	64.4	136	53.3	96.6	95.4	335	197	241
Cyanide	0.09 U	0.21 B	0.08 U	0.10 U	0.10 U	0.09 U	0.20 B	3.0	2.9	0.30 B

soilmet

High Concentration Volatile Organic Analysis for Waste Samples DeBoer Landfill		
Volatile Compound	Sample Locations and Number Concentrations in mg/kg	
	WS01	WS02
Chloromethane	5 U	5 U
Bromomethane	5 UJ	5 UJ
Vinyl Chloride	5 U	5 U
Chloroethane	5 U	5 U
Methylene Chloride	2.5 UJB	2.5 UJB
Acetone	5 UJB	5 UJB
Carbon Disulfide	2.5 U	2.5 U
1,1-Dichloroethene	2.5 U	2.5 U
1,1-Dichloroethane	2.5 U	2.5 U
1,2-Dichloroethene (total)	2.5 U	2.5 U
Chloroform	2.5 U	2.5 U
1,2-Dichloroethane	2.5 U	2.5 U
2-Butanone	5 U	5 U
1,1,1-Trichloroethane	2.5 U	2.5 U
Carbon Tetrachloride	2.5 U	2.5 U
Vinyl Acetate	5 UJ	5 UJ
Bromodichloromethane	2.5 U	2.5 U
1,2-Dichloropropane	2.5 U	2.5 U
cis-1,3-Dichloropropene	2.5 U	2.5 U
Trichloroethene	2.5 U	2.5 U
Dibromochloromethane	2.5 U	2.5 U
1,1,2-Trichloroethane	2.5 U	2.5 U
Benzene	2.5 U	2.5 U
trans-1,3-Dichloropropene	2.5 U	2.5 U
Bromoform	2.5 U	2.5 U
4-Methyl-2-Pentanone	5 U	5 U
2-Hexanone	5 U	5 U
Tetrachloroethene	2.5 U	2.5 U
1,1,2,2-Tetrachloroethane	2.5 U	2.5 U
Toluene	2.5 U	2.5 U
Chlorobenzene	2.5 U	2.5 U
Ethylbenzene	2.5 U	2.5 U
Styrene	2.5 U	2.5 U
Xylene (total)	2.5 U	2.5 U
Total Number of TICs *	0	2

* Number, not concentrations, of tentatively identified compounds (TICs).

wstvol

Volatile Organic Analysis for Waste Samples Tentatively Identified Compounds Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample WS02		
Benzene, methyl(-methyl ethyl)-	20.105	3 J
Unknown	22.345	3 J

wst-vtic

High Concentration Extractable Analysis for Waste Samples DeBoer Landfill		
Semi-volatile Compound	Sample Locations and Concentrations in mg/kg	
	WS01	WS02
Phenol	20 U	78 J
bis(2-Chloroethyl)Ether	20 U	200 U
2-Chlorophenol	20 U	200 U
1,3-Dichlorobenzene	20 U	200 U
1,4-Dichlorobenzene	20 U	200 U
Benzyl Alcohol	20 U	200 U
1,2-Dichlorobenzene	20 U	200 U
2-Methylphenol	20 U	200 U
bis(2-chloroisopropyl) ether	20 U	200 U
4-Methylphenol	20 U	200 U
n-Nitroso-Di-n-Propylamine	20 U	200 U
Hexachloroethane	20 U	200 U
Nitrobenzene	20 U	200 U
Isophorone	20 U	200 U
2-Nitrophenol	20 U	200 U
2,4-Dimethylphenol	20 U	200 U
Benzoic acid	100 U	28 J
bis(2-Chloroethoxy)Methane	20 U	200 U
2,4-Dichlorophenol	20 U	200 U
1,2,4-Trichlorobenzene	20 U	200 U
Naphthalene	20 U	200 U
4-Chloroaniline	20 U	200 U
Hexachlorobutadiene	20 U	200 U
4-Chloro-3-Methylphenol	20 U	200 U
2-Methylnaphthalene	20 U	11 J
Hexachlorocyclopentadiene	20 U	200 U
2,4,6-Trichlorophenol	20 U	200 U
2,4,5-Trichlorophenol	100 U	1000 U
2-Chloronaphthalene	20 U	200 U
2-Nitroaniline	100 U	1000 U
Dimethyl Phthalate	20 U	200 U
Acenaphthylene	20 U	200 U
2,6-Dinitrotoluene	20 U	200 U
3-Nitroaniline	100 U	1000 U
Acenaphthene	20 U	200 U
2,4-Dinitrophenol	100 U	1000 U
4-Nitrophenol	100 U	1000 U
Dibenzofuran	20 U	200 U
2,4-Dinitrotoluene	20 U	200 U
Diethylphthalate	20 U	200 U
4-Chlorophenyl-phenylether	20 U	200 U
Fluorene	20 U	200 U
4-Nitroaniline	100 U	1000 U

High Concentration Extractable Analysis for Waste Samples DeBoer Landfill		
	Sample Locations and Concentrations in mg/kg	
Semi-volatile Compound	WS01	WS02
4,6-Dinitro-2-Methylphenol	100 U	1000 U
n-Nitrosodiphenylamine	20 U	200 U
4-Bromophenyl-phenylether	20 U	200 U
alpha-BHC	20 U	200 U
Hexachlorobenzene	20 U	200 U
beta-BHC	20 U	200 U
Pentachlorophenol	100 U	1000 U
gamma-BHC (Lindane)	20 UJ	200 UJ
Phenanthrene	20 U	200 U
Anthracene	20 U	200 U
delta-BHC	20 U	200 U
Heptachlor	20 U	200 U
Aldrin	20 U	200 U
di-n-Butylphthalate	20 U	200 U
Fluoranthene	20 U	200 U
Heptachlor Epoxide	20 U	200 U
Monochlorobiphenyl	100 U	1000 U
Dichlorobiphenyl	100 U	1000 U
Trichlorobiphenyl	100 U	1000 U
Tetrachlorobiphenyl	100 U	1000 U
Pyrene	20 U	200 U
gamma Chlordane	20 U	200 U
Endosulfan I	20 U	200 U
alpha-Chlordane	20 U	200 U
Pentachlorobiphenyl	100 U	1000 U
4,4'-DDE	20 U	200 U
Dieldrin	20 U	200 U
Hexachlorobiphenyl	100 U	1000 U
Endrin	20 U	200 U
Endosulfan II	20 UJ	200 UJ
4,4'-DDD	20 U	200 U
Heptachlorobiphenyl	100 U	1000 U
Butylbenzylphthalate	20 U	200 U
Endosulfan sulfate	20 U	200 U
4,4'-DDT	20 U	200 U
Endrin ketone	20 U	200 U
Benzo(a)anthracene	20 U	200 U
Methoxychlor	20 U	200 U
Chrysene	20 U	27 J
Octachlorobiphenyl	200 U	2000 J
3,3'-Dichlorobenzidine	40 U	400 U
bis(2-Ethylhexyl)Phthalate	20 U	200 U
Nonachlorobiphenyl	200 U	2000 U

High Concentration Extractable Analysis for Waste Samples DeBoer Landfill		
Semi-volatile Compound	Sample Locations and Concentrations in mg/kg	
	WS01	WS02
Decachlorobiphenyl	200 U	2000 U
di-n-Octyl Phthalate	20 U	200 U
Benzo(b)Fluoranthene	20 U	200 U
Benzo(k)Fluoranthene	20 UJ	200 UJ
Benzo(a)Pyrene	20 U	200 U
Indeno(1,2,3-cd)Pyrene	20 U	200 U
Dibenzo(a,h)Anthracene	20 U	200 U
Benzo(g,h,i)Perylene	20 U	200 U
Total Number of TICs	5	18

wst-ext

High Concentration Extractable Analysis for Waste Samples Tentatively Identified Compounds Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample WS01		
Unknown Amide	14.78	8 J
Unknown Amide	16.35	12 UJB
Unknown Amide	16.48	20 UJB
Unknown Amide	17.91	180 UJB
Unknown Amide	20.68	140 UJB
Sample WS02		
Unknown Organic Acid	10.49	540 J
Unknown Organic Acid	10.97	2400 J
Unknown Organic Acid	12.42	140 J
Unknown Organic Acid	12.49	480 J
Unknown Organic Acid	13.91	100 J
Unknown Organic Acid	14.32	720 J
Unknown Organic Acid	15.18	120 J
Unknown Organic Acid	15.51	120 J
Unknown Organic Acid	15.87	160 J
Unknown	15.93	120 J
Unknown Hydrocarbon	17.42	260 J
Unknown Organic Acid	17.64	200 J
Unknown Hydrocarbon	17.83	200 J
Unknown Hydrocarbon	18.00	80 J
Unknown	18.19	140 J
Unknown Alkane	18.73	180 J
Unknown Alkane	19.62	220 J
Unknown Alkane	20.27	280 J

wstsvtic

High Concentration Pesticide and Aroclor Analysis for Waste Samples DeBoer Landfill		
Pesticides and Aroclors	Sample Locations and Concentrations in mg/kg	
	WS01	WS02
Toxaphene	50 UJ	50 UJ
Aroclor-1016	10 UJ	10 UJ
Aroclor-1221	10 UJ	10 UJ
Aroclor-1232	10 UJ	10 UJ
Aroclor-1242	10 UJ	10 UJ
Aroclor-1248	10 UJ	10 UJ
Aroclor-1254	10 UJ	10 UJ
Aroclor-1260	10 UJ	10 UJ

wst-aro

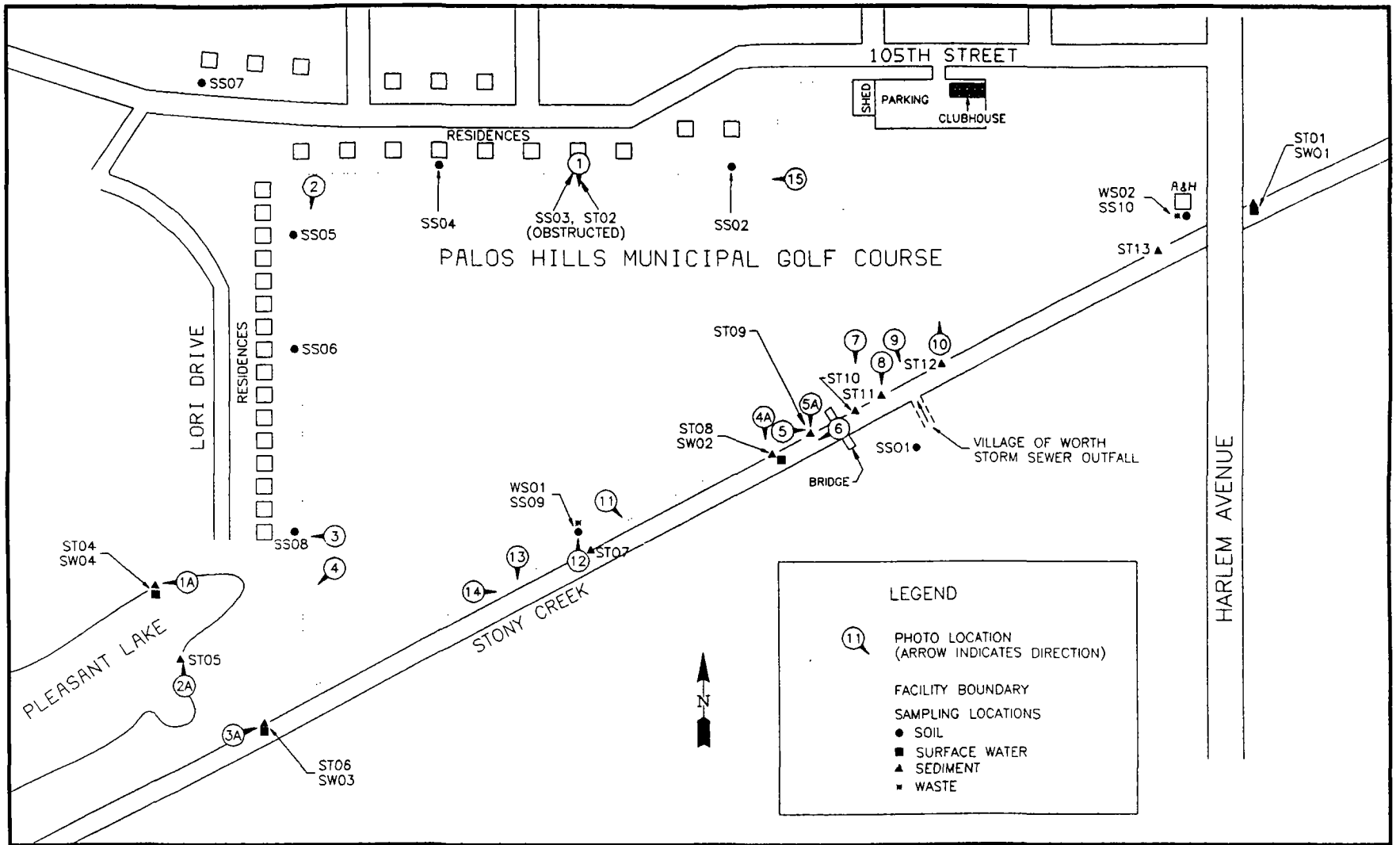
Inorganic Analysis for Waste Samples DeBoer Landfill		
Metals and Cyanide	Sample Locations Concentrations in mg/kg	
	WS01	WS02
Aluminum	1430	366
Antimony	11.1 JBN	2.4 UJN
Arsenic	2.7	1.6 JBW
Barium	1900	1130
Beryllium	3.9 RUN	0.20 RUN
Cadmium	29.1 JEN	14.3 JEN
Calcium	5680 JE	1560 JE
Chromium	24.3	9.8
Cobalt	1880 JE	1.2 JBE
Copper	153 JN	174 JN
Iron	2110 JE	2260 JE
Lead	60.6	14100 J
Magnesium	208 B	414 B
Manganese	107 JN	24.7 JN
Mercury	0.08 U	0.27
Nickel	47.6	11.5
Potassium	606 B	332 B
Selenium	0.20 UJNW	0.99 UNW
Silver	134	0.60 U
Sodium	33200	221 B
Thallium	0.20 UJNW	0.20 UJNW
Vanadium	27.2	2.0 B
Zinc	3450 JE	286 JE
Cyanide	0.38 J	0.12 UJ

wst-inorg

Appendix D

DeBoer Landfill

Site Photographs



SOURCE: MODIFIED FROM USGS, 1980	FIGURE D-1 PHOTO LOCATIONS
SCALE: NOT TO SCALE	DEBOER LANDFILL PALOS HILLS, ILLINOIS

CHI00103

Date: 8/25/93

Time: 1250

Photo Taken By: M.A. Sanchez

Photo Number: 1a

Direction of Photo: West

Description: SW04 and ST04 were collected from this location at the north bank of the wetlands area (Pleasant Lake). This area is just southwest of the site.

Date: 8/25/93

Time: 1320

Photo Taken By: M.A. Sanchez

Photo Number: 2a

Direction of Photo: North

Description: ST05 was collected from this location at the south bank of Pleasant Lake.

Date: 8/25/93

Time: 1355

Photo Taken By: M.A. Sanchez

Photo Number: 3a

Direction of Photo: East

Description: SW03 and SW06 were collected from this location at the north bank of Stony Creek, just downstream of the site.

Date: 8/25/93

Time: 1850

Photo Taken By: M.A. Mastronardi

Photo Number: 4a

Direction of Photo: South

Description: SW02 and ST08 were collected from this location, south of the 8th green of the golf course, west of the golf course bridge. The samples were collected where a natural gully enters Stony Creek.

Date: 8/26/93

Time: 0900

Photo Taken By: M.A. Mastronardi

Photo Number: 5a

Direction of Photo: South

Description: ST09 was collected from this location, approximately 75 feet west of the golf course bridge. The sample was collected at the point where a gully eroded by drain tile discharge enters Stony Creek.

Date: 4/8/93

Time: 1010

Photo Taken By: M.A. Mastronardi

Photo Number: 1

Direction of Photo: South

Description: Photo shows the southern boundary of the ditch which collects runoff from the northwestern portion of the site. ST02 and SS03 were collected just north of this location.

Date: 4/8/93

Time: 1015

Photo Taken By: M.A. Mastronardi

Photo Number: 2

Direction of Photo: South

Description: Photo shows the western boundary of the site, taken from the northwestern corner of the site. A new sewer line had just been installed along the western boundary of the site.

Date: 4/8/93

Time: 1015

Photo Taken By: M.A. Mastronardi

Photo Number: 3

Direction of Photo: West

Description: SS08 was collected from the back yard of the residence shown, just behind the wooden fence near southwestern corner of the site.

Date: 4/8/93

Time: 1015

Photo Taken By: M.A. Mastronardi

Photo Number: 4

Direction of Photo: Southwest

Description: The southwestern portion of the site is shown, with wetlands (Pleasant Lake) in the background. Ponded runoff is visible in the foreground.

Date: 4/8/93

Time: 1030

Photo Taken By: M.A. Mastronardi

Photo Number: 5

Direction of Photo: East

Description: Photo shows a drain tile draining surface water runoff to Stony Creek. ST09 was collected where runoff entered the creek.

Date: 4/8/93

Time: 1040

Photo Taken By: M.A. Mastronardi

Photo Number: 6

Direction of Photo: Southwest

Description: Photo was taken from the golf course bridge across Stony Creek, showing downstream portions of the creek.

Date: 4/8/93

Time: 1050

Photo Taken By: M.A. Mastronardi

Photo Number: 7

Direction of Photo: South

Description: Photo shows a gully eroded by surface runoff which enters Stony Creek, located approximately 200 feet east of the golf course bridge. ST10 was collected in Stony Creek, where the gully discharges to the creek.

Date: 4/8/93

Time: 1055

Photo Taken By: M.A. Mastronardi

Photo Number: 8

Direction of Photo: South

Description: Photo shows a gully located approximately 50 feet east of ST10 location. ST11 was collected in Stony Creek, where the gully discharges to the creek.

Date: 4/8/93

Time: 1105

Photo Taken By: M.A. Mastronardi

Photo Number: 9

Direction of Photo: South

Description: The Village of Worth storm sewer outfall at the southern bank of Stony Creek.

Date: 4/8/93

Time: 1110

Photo Taken By: M.A. Mastronardi

Photo Number: 10

Direction of Photo: North

Description: Photo shows a drain tile draining the southeastern portion of the site, located about 100 feet upstream of the Worth storm sewer outfall. ST12 was collected where runoff from the drain tile appeared to enter Stony Creek.

Date: 4/8/93

Time: 1325

Photo Taken By: M.A. Mastronardi

Photo Number: 11

Direction of Photo: Southeast

Description: Photo shows exposed wastes observed at the southwestern portion of the site, near Stony Creek. Wastes appeared to consist of paper, scrap metal, rusted drums, rubber, and roofing material.

Date: 4/8/93

Time: 1330

Photo Taken By: M.A. Mastronardi

Photo Number: 12

Direction of Photo: North

Description: WS01, consisting of a blue granular substance, was collected from the rusted drum shown. SS09 was collected near the drum; ST07 was collected in Stony Creek approximately 50 feet south of the drum.

Date: 4/8/93

Time: 1335

Photo Taken By: M.A. Mastronardi

Photo Number: 13

Direction of Photo: South

Description: Photo shows more debris located near Stony Creek at the southwestern portion of the site. Metal, asphalt roofing material, and metal containers including drums were observed.

Date: 4/8/93

Time: 1355

Photo Taken By: M.A. Mastronardi

Photo Number: 14

Direction of Photo: East

Description: More debris located near Stony Creek at the southwestern portion of the site. The debris appeared to consist of rusted drums and paper.

Date: 4/8/93

Time: 1400

Photo Taken By: M.A. Mastronardi

Photo Number: 15

Direction of Photo: West

Description: Photo shows the ditch located at the northwestern boundary of the site, where ST02 was collected. This ditch collects drainage from the northwestern portion of the site, and reportedly drains to city sewers.